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RECOIL

BY GEORGE O. SMITH

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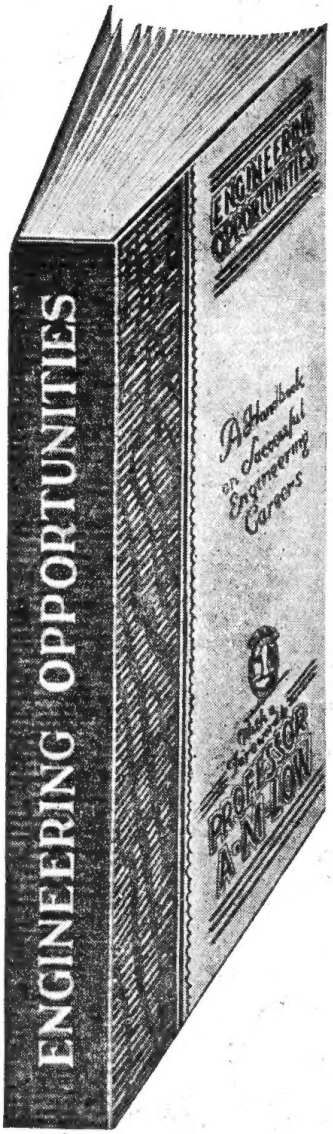
AMBITIOUS ENGINEERS



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Recoil

By George O. Smith

The near impossibility of hitting a spaceship with a shell has been discussed. But even an electron gun would, curiously, tend to defeat itself! The weapon protects the target!

WALTER FRANKS sat in the director's office; his feet on the director's desk. He was smoking one of the director's cigarettes. He was drinking the director's liquor, filched shamelessly from the director's private filing cabinet where it reposed in the drawer marked "S." Drawer "B" would have given beer, but Walt preferred Scotch.

He leaned forward and tossed the director's cigarette into the director's wastebasket and then he pressed the button on the desk and looked up.

But it was not the director's secretary who entered. It was his own, but that did no disturb Franks. He knew that the director's secretary was off on Mars enjoying a honeymoon with the director.

Jeanne entered and smiled. "Must you call me in here to witness you wasting the company's time?" she asked in mock anger.

"Now look, Jeanne, this is what Channing does."

"No dice. You can't behave as Don Channing behaves. The reason is my husband."

"I didn't call to have you sit on my lap. I want to know if the mail is in."

"I thought so," she said. "And so I brought it in with me. Anything more?"

"Not until you get a divorce," laughed Franks.

"You should live so long," she said with a smile. She stuck her tongue out at him.

Walt thumbed his way through the mail, making notations on some, and setting others aside for closer reading. He came to one and tossed it across the desk at Jeanne. She took the message and read:

Dear Acting Director:
Having a wonderful honeymoon; glad you aren't here!

Don and Arden.

"Wonderful stuff, love," smiled Franks.

"It is," agreed Jeanne. A dreamy look came into her eyes.

"Scram, Jeanne. There are times when you can't work worth a darn. Usually when you're thinking of that husband of yours. What's he got that I haven't?"

"Me," said Jeanne slyly. She arose and started for the door. "Oh," she said, "I almost forgot. Warren phoned up and said that the turret is ready for a try-out."

"Fine," said Walt. "Swell." He unfolded himself from the chair with alacrity and almost beat the girl to the door.

"My," she laughed, "you can move after all."

"Sure," he grinned. "Now I have something for which to live."

"I hope it's worth it. You've sunk a lot of change into that bughouse."

"I know, but we can stand it. After all, since Don took over this affair, Interplanetary Communications is an up and running business. We're out of the Government subsidy class now, and are making money. If this works, we'll make more. It's worth a gamble."

"What are you trying to build?" asked Jeanne.

"Why, since this business of contacting ships-at-space has become so universally liked, we have a tough time keeping ships in the mobile beam. That's because they are always ducking out of the way of loose meteorites and stuff, and that screws up their course. We can't see 'em, and must take their position on the basis of their expected course. We never know whether we hit 'em until they land.

"Now I've been trying to devise a space gun that will blast meteors directly instead of avoiding them by coupling the meteor detector to the autopilot."

"Gonna shoot 'em out of existence?"

"Not exactly. Popping at them with any kind of a rifle would be like trying to hit a flying bird with a spitball. Look, Jeanne, top speed on the run from Mars to Terra at major opposition is up among the

thousands of miles per second at the turnover. A meteor itself may be blatting along at fifty miles per second. Now a rifle, shooting a projectile at a few thousand feet per second would be useless. You'd have the meteor in your lap and out of the other side while the projectile is making up its mind to move forward and relieve the pressure that is building up behind it due to the exploding powder.

"I've designed an electron gun. It is a superpowered, oversized edition of the kind they used to use in kinescope tubes, oscilloscope tubes, and electron microscopes. Since the dingbat is to be used in space, we can leave the works of the gun open and project a healthy stream of electrons at the offending object without their being slowed and dispersed by an impending atmosphere."

"But that sounds like shooting battleships with a toy gun."

"Not so fast on the objections, gal," said Franks. "I've seen a simple oscilloscope tube with a hole in the business end. It was burned right through a quarter inch of glass because the fellows were taking pix and had the intensity turned up high. The sweep circuit blew a fuse and the beam stopped on one spot. That was enough to puncture the screen."

"I see. That was just a small affair?"

"A nine-inch tube. The electron gun in a nine-inch kinescope tube is only about four inches long and three quarters of an inch in diameter. Mine, out there in the turret, is six feet in diameter and thirty feet long. I can fire out quite a bundle of electrons from a tube of that size."

"It sounds as though you mean business."

"I do. This is the right place to do research of that kind. Out here on Venus Equilateral, we're in a natural medium for an electron gun, and we've the power requirements to run it. I can't think of any place in the System that offers better chances."

"When are you going to try it out?"

"As soon as a meteor comes over the pike, as long as Warren says we're ready."

Jeanne shook her head. "I wish Channing were here. Things are wild enough when you are both working on something screwball, but I could get scared something fierce at the thought of either one of you working without the other."

"Why?"

"You two sort of act as balance wheels to one another's craziness. Oh, don't take that word to heart. Everybody on the Relay Station thinks the world of you two, myself included. *Craziness* in this case means a sort of friendly description of the way your brains work. Both of you dash off on tangents now and then, and when either one of you gets off the beam, the other one seems to swing the weight required to bring the lost one back to the fold."

"That's a real mess of mixed metaphors, Jeanne. But I am going to surprise Don hairless when he gets back here and finds that I've done what people claimed couldn't be done. I'm going to be the bird whose bust sits in the Hall of Fame in between Edison, Einstein, Alexander Graham Bell, S. F. B. Morse, and—"

"Old Man River, Jack Frost, and Little Boy Blue," laughed Jeanne. " I hope it's not a bust, Walt."

"You mean I should have a whole statue?"

" I mean, I hope your dream is not a bust!"

Jeanne left, with Walt right behind her. Franks did not remain at the desk, however, but made his way from the office level to the outer skin of the Relay Station by way of a not-often-used stairway that permitted him to drop to the outer skin. Above his head were the first levels of apartmental cubicles occupied by the personnel of Venus Equilateral. Out here, Walt had but a scant thickness of steel between him and the void of space.

His pathway was strewn with pipe, cable, aid storage tanks. He passed a long-forgotten project and paused to reminisce over the days when a meteor shower had caused them some concern by puncturing the skin twice. The installation of a sponge elastomer under compression in this space had been stopped when a brilliant astrophysicist proved to Channing—then a supervisor in the operations laboratory—that the chances of being dangerously punctured were practically nil, and that the actual puncturing had done nothing but make people uncomfortably leery.

Then Franks came to a room built from outer skin to inner skin and about fifty feet in diameter. He unlocked the door with a key on his watch chain, and entered. Jim Warren was waiting for him.

"Hi, ordnance expert. We're ready as soon as they are."

"How's she working?"

"I should know? We've been squirting ropes of electrons out to blank space for

hours. She gets rid of them all right. But have we done any good? I dunno."

"Not a meteor in sight, I suppose."

"The detector hasn't blinked once. But when she does, your electron gun will follow the darned thing until it gets a half thousand miles out of sight, or will pick it up a thousand miles before it get here."

"That sounds fine. It's a good thing that we don't have to swivel that mess of tube around a whole arc in actual use. It would take too long. But we'll put one in each upper quadrant of a spaceship and devise it so that its working arc will be small enough to make it work. Time enough to find that out after we know if it works."

"That's something that I've been wondering about," said Warren. "Why didn't we build a small one out here and evacuate the skin for a few hundred feet? We could set up a few chunks of iron and squirt electrons at 'em."

"And have the folks upstairs screaming? Nope. I've a hunch that when this beam hits something hard, it will create quite a ruckus. It would be fine to have a hunk blown right out of the skin, wouldn't it?"

"Guess you're right," admitted Warren.

The meteor alarm flashed, and a bell dinged once.

"Here's our chance," snapped Walt. "We've about fifteen seconds to work on this one."

He looked out of a tiny window, and saw that the big tube had lined up with the tiny model that was a monitor for the big tube. He sighted through the model, which in itself was a high-powered telescope, and he saw the jagged meteor rushing forward at any angle to the Station. It would miss by miles, but it would offer a good target.

"Cathode's hot," said Warren.

Walt Franks grasped the power switch and thrust it down part way. Meters leaped up their scales and from somewhere there came the protesting whine of tortured generators. Through the window, nothing very spectacular was happening. The cathode glowed slightly brighter due to the passage of current through its metal and out of the coated surface. But the electrostatic stresses that filled the gaps between the accelerator and focusing anodes was no more visible than the electricity that runs a toy motor. Its appearance had not changed a bit, but from the meters, Walt Franks knew that megawatts of electronic power, in the shape of high-velocity electrons, was being pored from the cathode; accelerated by the ring anodes; and focused to a narrow beam by the focusing anodes. And from the end of the framework that supported these anodes, a cylinder of high-velocity electrons poured forth, twelve inches in diameter.

Through the telescope, the meteor did not seem to be disturbed. It exploded not, neither did it melt. It came on inexorably, and if the inanimate nickel and iron of a meteor can be said to have such, it came on saucily and in utter disregard for the consequences.

Frantically, Walt cranked the power up higher and higher, and the lights all over the Station dimmed as the cathode gun drained the resources of the Station.

Still no effect.

Then in desperation, Walt slammed the power lever down to the bottom notch. The girders strained in the tube from the terrific electrostatic stresses, and for a second, Walt was not certain that the meteor was not finally feeling the effects of the electron bombardment.

He was not to be sure, for the experiment came to a sudden stop.

An insulator arced where it led the high-voltage lines that fed the anodes through the wall. Immediately it flashed over, and the room filled to the brim with the pungent odor of burning insulation. A medium-voltage anode shorted to one of the high-voltage anodes, and the stress increased in the tube. It broke from its moorings, this low-voltage anode, and it plunged backward, down the tube toward the cathode. It hit, and it was enough to jar the whole tube backward on its gimbals.

The shock warped the mounting of the tube, and it flexed slightly, but sufficiently to bring the farthermost and highest voltage anode into the electron stream. It glowed redly, and the secondary emission raved back through the series of electrodes, heating them and creating more warpage.

Then the pyrotechnic stopped. Great circuit breakers crashed open up in the power room hundreds of feet above them, high in the Station.

Walt Franks looked out through the window at the tangled mess that had been a finely machined piece of equipment. He saw the men looking quizzically at him as he turned away from the window, and with a smile that cost him an effort, he said: "All right, so Marconi didn't get WLW

on his first try, either. Come on, fellows, and we'll clean up this mess."

With the utter disregard that inanimate objects show toward the inner feelings of the human being, the meteor alarm blinked again and the bell rang. The pilot tube swiveled quickly to one side, lining up with the spot in the celestial globe of the meteor detector. Out in the turret that housed the big tube, motors strived against welded commutators and the big tube tried to follow.

Walt looked at the pointing tube and said: "All right! Go ahead and point!"

Don Channing smiled at Arden. "Mrs. Channing," he said, "must you persist in keeping me from my first love?"

Arden smiled winningly. "Naturally. That's what I'm here for. I intend to replace your first love entirely and completely."

"Yeah," drawled Don, "and what would we live on?"

"I'll permit you to attend to your so-called first love during eight hours every day, providing that you remember to think of me every half-hour."

"That's fine. But you really aren't fair about it. We were on Terra for two weeks. I was just getting interested in a program outlined by one of the boys that works for Interplanet, and what happened? You hauled me off to Mars. We stayed for a week at the Terraland Hotel at Canalopsis and the first time that Keg Johnson came to see us with an idea and a sheaf of papers, you rush me off to Lincoln Head. Now I'm scared to death that some guy will try to open a blueprint here; at which I'll be rushed off to the Palanortis Country until someone finds us there. Then it'll be the Solar Observatory on Mercury or the Big Glass on Luna."

Arden soothed Don's feelings by sitting on his lap and snuggling. "Dear," she said in a voice that positively dripped, "we're on a honeymoon, remember?"

Don stood up, dumping Arden to the floor. "Yeah," he said, "but this is the highest velocity honeymoon that I ever took!"

"And it's the first one I was ever on where the bridegroom took more time admiring beam installations than he took to whisper sweet nothings to his gal. What has a beam transmitter got that I haven't got?"

"One: Its actions can be predicted. Two: It can be controlled. Three: It never says anything original, but only repeats what it has been told. Four: It can be turned off."

Arden caught Don on the point of the chin with a pillow and effectively smothered him. She followed her slight advantage with a frontal attack that carried him backward across the bed, where she landed on top viciously and proceeded to lambaste him with the other pillow.

It was proceeding according to plan, this private, good-natured war, until a knock on the door caused a break in operations. Channing struggled out from beneath Arden and went to the door trying to comb his hair by running spread fingers through it. He went with a sense of failure caused by Arden's quiet laugh and the statement that he resembled a bantam rooster.

The man at the door apologized, and then said: "I'm Doug Thomas of the *Triworld News.*"

"Come in," said Don, "and see if you can find a place to sit."

"Thanks."

"I didn't know that *Triworld News* was interested in the wedded life of the Channings. Why doesn't *Triworld* wait until we find out about it ourselves?"

"*Triworld* does not care to pry into the private life of the newly wed Channing family," laughed Doug. "We, and the rest of the system do not give a damn whether Mrs. Channing calls you Bunny-bit or Sugar-pie—"

"Sweetums," corrected Arden with a gleam in her eye.

"—we've got something big to handle. I can't get a thing out of the gang at Canalopsis, they're all too busy worrying."

"And so you came here? What do you expect to get out of us? We're not connected in any way with Canalopsis."

"I know," said Doug, "but you do know space. Look, Channing, the *Solar Queen* has been missing since yesterday morning!"

Don whistled.

"See what I mean? What I want to know is this: What is your opinion on the matter? You've lived in space for years, on the Relay Station, and you've had experience beyond anybody I can reach."

"Missing since yesterday morning," mused Channing. "That means trouble."

"That's what I thought. Now if you were running the spaceport at Canalopsis, what would your own private opinion be?"

"I don't know whether I should speak for publication," said Don.

"It won't be official. I'll corroborate anything you say before it is printed, and so on. But I want an unofficial opinion, too. If you

want this withheld, say so, but I still want a technical deduction to base my investigation on. I don't understand the ramifications and the implications of a missing ship. It is enough to make Keg Johnson's hair turn gray overnight, though, and I'd like to know what is so bad before I start to turn stones."

"Well, keep it off the record until Canalopsis gives you the go-ahead. I can give you an opinion, but I don't want to sound official."

"O.K. Do you suppose she was hit by a meteor shower?"

"Doubt it like the devil. Meteor detectors are many and interconnected on a spaceship, as well as being alarmed and fused to the nth degree. Any trouble with them will bring a horde of ringing bells all through the ship which would bring the personnel a-running. They just don't go wrong for no reason at all."

"Suppose that so many meteors came from all directions that the factors presented to the autopilot—"

"No dice. The possibility of a concentration of meteors from all directions all about to pass through a certain spot in space is like betting on two Sundays in a row. Meteors don't just run in all directions, they have a general drift. And the meteor detecting equipment would have been able to pick up the centroid of any group of meteors soon enough to lift the ship around it. Why, there hasn't been a ship hit by a meteor in ten years."

"But—"

"And if it had been," continued Channing, "the chances are more than likely that the ship wouldn't have been hit badly enough to make it impossible to steer, or for the crew to shoot out message tubes which would have landed on Canalopsis."

"Suppose that the ship ducked a big shower and it went so far out of course that they missed Mars?"

"That's out, too," laughed Channing.

"Why?"

"A standard ship of space is capable of hitting it up at about 4-G all the way from Terra to Mars at major opposition and end up with enough power and spare cathodes to continue on to Venus in quadrature. Now the velocity of the planets in their orbits is a stinking matter of miles per second, while the top speed of a ship in even the shortest passage runs up into four figures per second. You'd be surprised at what velocity you can attain at 1-G for ten hours."

"Yes?"

"It runs to slightly less than two hundred and fifty miles per second, during which you've covered only four million miles. In the shortest average run from Venus to Terra at conjunction, a skimpy twenty-five million miles, your time of travel is a matter of twenty-five hours add, running at the standard 2-G. Your velocity at turnover—or the halfway point where the ship stops going up from Terra and starts to go down to Venus—is a cool five hundred mills per second. So under no condition would the ship miss its objective badly enough to cause its complete loss. Why, this business is run so quickly that were it not for the saving in time and money that amounts to a small percentage at the end of each flight, the pilot could head for his planet and approach the planet asymptotically."

"You know what you're doing, don't you?" asked the reporter.

"I think so."

"You're forcing my mind into accepting something that has never happened before, and something that has no basis for its—"

"You mean piracy? I wonder. We've all read tales about the Jolly Roger being painted on the side of a sleek ship of space while the pirate, who at heart is a fine fellow though uninhibited, hails down the cruiser carrying radium. He swipes the stuff and kisses all the women whilst menacing the men with a gun hand full of searing, coruscating, violently lethal ray pistol. But that sounds fine in stories. The trick is tougher than it sounds, Thomas. You've got to catch your rabbit first."

"Meaning?"

"Meaning that finding a ship in space to prey upon is somewhat less difficult than juggling ten billiard balls whilst riding a horse blindfolded. Suppose you were to turn pirate. This is what would happen:

"You'd get the course of the treasure ship from the spaceport, fine and good, by resorting to spies and such. You'd lie in wait out there in the blackness of space, fixing your position by the stars and hoping that your error in fix was less than a couple of thousand miles. It's more likely to be a hundred thousand miles, though. The time comes. You look to your musket, sharpen your sword, and see to the priming of your Derringers that are thrust into the red sash at your waist. You are right on the course, due to your brilliant though lawless navigator who was tossed out of astrogator's school for filching the teacher's whiskey. Then the treasure ship zoops past at a

healthy hundred miles per second and you decide that since she is hitting it up at 2-G, you'd have to start from scratch at a heck of a lot better to catch her within the next couple of light years.

"So you give up, join the Congregational Church and pass the collection plate every Sunday."

"But suppose you took the course as laid and applied the same acceleration? Suppose you followed on the heels of your quarry until you were both in space? You could do it then, couldn't you?"

"Gosh," said Channing, "I never thought of that. That's the only way a guy could pirate a ship—unless he planted his men aboard and they mutinied."

"Then it might be pirates "

"It might be," admitted Channing. "It'd have to occur near beginning or end, of course, though. I can't think of anything safer than being shot at out of a gun of any kind while both crates are hitting it up at a couple of hundred miles per second and at a distance of a few miles apart. It would be all right if you were both running free, but at 2-G acceleration, you'd have to do quite a bit of ballistic gymnastics to score a hit."

"Or run in front of your quarry and sow a bouquet of mines."

"Except that the meteor detector would show the position of the pirate craft in the celestrial globe and the interconnecting circuits would cause the treasure ship to veer off at a sharp angle. Shucks, Doug, this thing has got too many angles to it. I can't begin to run it off either way. No matter how difficult it may sound, there are still ways and means to do it. The one thing that stands out like a sore thumb is the fact that the *Solar Queen* has turned up missing. Since no inanimate agency could cause failure, piracy is the answer."

"You're sure of that?"

"Not positive. There are things that might cause the ship to founder. But what they are depend upon too many coincidences. It's like hitting a royal flush on the deal, or filling a full house from two pair."

"Well, thanks, Channing. I'm heading back to Canalopsis right now. Want to come along?"

Channing looked at Arden, who was coming from the dressing room carrying her coat and he nodded. "The gal says yes," he grinned. "Annoy her until I find my shoes, will you?"

Arden wrinkled her nose at Don. "I'll like that," she said to Doug.

The trip from Lincoln Head to Canalopsis was a fast one. Doug Thomas drove the little flier through the thin air of Mars at a breakneck speed and covered the twelve hundred miles in just shy of two hours. At the spaceport, Channing found that he was not denied the entrance as the reporter had been. He was ushered into the office of Keg Johnson in record time, and the manager of the Canalopsis Spaceport greeted Don with a worried expression on his face.

"Still gone," he said cryptically. "Like the job of locating her?"

Don shook his head with a sympathetic smile. "Like trying to find a grain of sand on a beach—a specified grain, I mean. Wouldn't know how to go about it."

Keg nodded. "I thought as much. That leaves her out of the picture. Well, up to now space travel has been about as safe as spending the evening in your easy-chair. Hello, Arden, how's married life?"

"Can't tell yet," she said with a twinkle. "I've got to find out whether I can break him of a dozen bad habits before I'll commit myself."

"I wish you luck, Arden, although from that statement, it's Don that needs the luck."

"We came to see if there was anything we could do about the *Solar Queen,*" offered Channing.

"What can anybody do?" asked Keg with spread hands. "About all we can do is to put it down in our remembrances and turn to tomorrow. Life goes on, you know," said Keg in a resigned tone, "and either we keep up or we begin to live in the past. Are you going to stay here for a day or two?"

"Was thinking about it," said Don.

"Well, suppose you register at the Terraland and meet me back here for lunch. If anything occurs, I'll shoot you a quickie." Keg looked at his watch and whistled. "Lordy," he said ruefully. "I didn't know how late it was. Look, kids, I'll run you downtown myself, and we'll all have lunch at the Terraland. How's that?"

"Sounds better," admitted Channing. "My appetite, you know."

"I know," laughed Arden. "Come on, meat-eater, and we'll peel a calf."

It was during lunch that a messenger raced into the dining room and handed Keg a letter. Keg read, and then swore roundly. He tossed the letter across the table to Don and Arden.

To the Operators of all Spacelines:

It has come to my attention that your ships require protection. The absence of the *Solar*

Queen is proof enough that your efforts are insufficient to insure the arrival of a spaceship at its destination.

I am capable of offering protection at the reasonable rate of one dollar solarian for every gross ton, with the return of ten dollars solarian if any ship fails to come through safely. I think that you may find it necessary to subscribe to my insurance, since without my protection I cannot be responsible for failures.

ALLISON (HELLION) MURDOCH.

"Why the dirty racketeer," stormed Arden. "Who is he, anyway?"

"Hellion Murdoch is a man of considerable ability as a surgeon and a theoretical physicist," explained Don. "He was sentenced to the gas chamber ten years ago for trying some of his theories out on human beings without their consent. He escaped with the aid of fifteen or twenty of his cohorts who had stolen the *Hippocrates* right out of the private spaceport of the Solarian Medical Research Institute."

"And they headed for the unknown," offered Keg. "Wonder where they've been for the last ten years."

"I'll bet a hat that they've been in the Melapalan Jungle, using the machine shop of the *Hippocrates* to fashion guns. That machine shop was a dilly, if I remember correctly."

"It was. The whole ship was just made to be as self-sustaining as it could be. They used to run all over the System in it, you know, chasing bugs. But look, Don, if I were you, I'd begin worrying about Venus Equilateral. That's where he'll hit next."

"You're right. But what are you going to do?"

"Something that will drive him right out to the Relay Station," said Keg in a sorrowful tone. "Sorry, Don, but when I put an end to all space shipping for a period of six weeks, Hellion Murdoch will be sitting in your lap."

"He sure will," said Channing nervously. "Arden, are you willing to run a gantlet?"

"Sure," she answered quickly. "Are you sure that there will be danger?"

"Not too sure, or I wouldn't take you with me. Unless Murdoch has managed to build himself a couple of extra ships, we've got a chance in three that he'll be near one of the other two big spaceports. So we'll slide out of here unannounced and at a peculiar time of day. We'll load up with gravanol and take it all the way to the Station at 6-G."

"He may have two or three ships," said Keg. "A man could cover all the standard space shipping in three, and he might not have too bad a time with two, especially if he were only out looking for those which weren't paid for. But, look, I wouldn't check out of the Tarraland if I were you. Keep this under cover. Your heap is all ready to take sky from Canalopsis Spaceport and you can leave directly."

"Hold off on your announcement as long as possible," Don asked Keg.

Johnson smiled and nodded. "I'll give you time to get there anyway. "But I've no control over what will be done at Northern Landing or Mojave. They may kick over the traces."

"Arden, we're moving again," laughed Don. "Keg, ship us our duds as soon as this affair is cleared up." Channing scribbled a message on the back of Murdoch's letter. "Shoot this off to Walt Franks, will you? I won't wait for an answer, that'll take about fifty minutes, and by that time I'll have been in space for twenty."

They paused long enough to stop at the nurse's office at the spaceport for a heavy shot of gravanol and a thorough bracing with wide adhesive tape. Then they made their way to the storage space of the spaceport where they entered their small ship. Channing was about to send the power lever home when the figure of Keg Johnson waved him to stop.

Keg ran up to the space lock and handed in a paper.

"You're it," he said. "Good luck, Channing."

It was another message from Hellion Murdoch. It said, bluntly:

To Donald Channing,
Director of Communications:

Considerable difficulty has been experienced in transmitting messages to the interested parties. I desire a free hand in telling all who care, the particulars of my insurance.

Since your Relay Station is in a position to control all communications between the worlds, I am offering you the option of either surrendering the Station to me, or of fighting me for its possession. I am confident that you will see the intelligent course; an unarmed station in space is no match for a fully armed and excellently manned cruiser.

Your answer will be expected in five days.

ALLISON (HELLION) MURDOCH.

Channing snarled and thrust the power lever down to the last notch. The little ship leaped upward under 5½-G, and was gone from sight in less than a minute.

Arden shook her head. "What was that message you sent to Franks?" she asked.

"I told him that there was a wild-eyed pirate on the loose, and that he might make a stab at the Station. We are coming in as soon as we can get there and to be on the lookout for us on the landing communications radio, and also for anything untoward in he nature of space vessels."

"Then this is not exactly a shock," said Arden, waving the message from Murdoch.

"Not exactly," said Channing dryly. "Now look, Arden, you go to sleep. This'll take hours and hours, and gabbing about it will only lay you out cold."

"I feel fine," objected Arden.

"I know, but that's the gravanol, not you. The tape will keep you intact, and the gravanol will keep you awake without pain or nausea. But you can't get something for nothing, Arden, and when that gravanol wears off, you'll spend ten times as long with one tenth of the trouble you might have had. So make it easy for yourself now and later you'll be glad that you aren't worse."

The sky blackened, and Channing knew that they were free in space. Give them another fifteen minutes and the devil himself couldn't find them. With no flight plan scheduled and no course posted, they might as well have been in the seventeenth dimension. As they emerged from the thin atmosphere, there was a fleeting flash of fire from several miles to the East, but Channing did not pay particular attention to it. Arden looked through a telescope, and said that she thought that she saw a spaceship circling, but that she could not be sure.

Whatever it was, nothing came of it.

The trip out to the Station was a monotonous series of uneventful hours, proceeding along one after the other. They dozed and slept most of the time, eating sparingly and doing nothing that was not absolutely necessary.

Turnabout was accomplished and then the deceleration began, equally long and equally monotonous. It was equally inactive. Channing tried to plan, but it failed because he could not plan without talking and discussing the affair with his men; too much depended upon their cooperation. He fell into a morose futile feeling that made itself evident in grousing; Arden tried to jolly him, but Don's usually bubbling spirit was doused too deep. Also, Arden herself was none too happy, and she failed to convince herself, which is necessary before one can convince anyone else of anything.

Then they sighted the Station, and Channing's ill spirit left. A man of action, what he hated most was the no-action business of just sitting in a little capsule of steel waiting for the Relay Station to come up out of the sky below. Once it was sighted, Channing could foresee action, and his grousing stopped.

They zipped past the Station at a distance of ten miles, and Channing opened the radio.

"Walt Franks! Wake up, you slumberhead."

The answer came inside of a half minute. "Hello, Don. Who's asleep?"

"Where are you? In Joe's?"

"Joe has declared a drought for the duration," said Franks with a laugh. "He thinks we can't think on Scotch."

"We can't. Have you seen the boys?"

"Murdoch's crew? Sure, they're circling at about five miles, running around in the plane of the ecliptic. Keep running on the colure and the chances are that you won't even see 'em. But, Don, they can hear us!"

"How about the landing stage at the South end?"

"There are two of them running around the Station at different heights from South to North. The third is circling in a four-mile circle on a plane five miles South of the Station. We've picked up a few HE shells, and I guess that, if you try to make a landing there, you'll be shot to bits. That devil is using the meteor detector for a gun pointer."

"Walt, remember the range finder?"

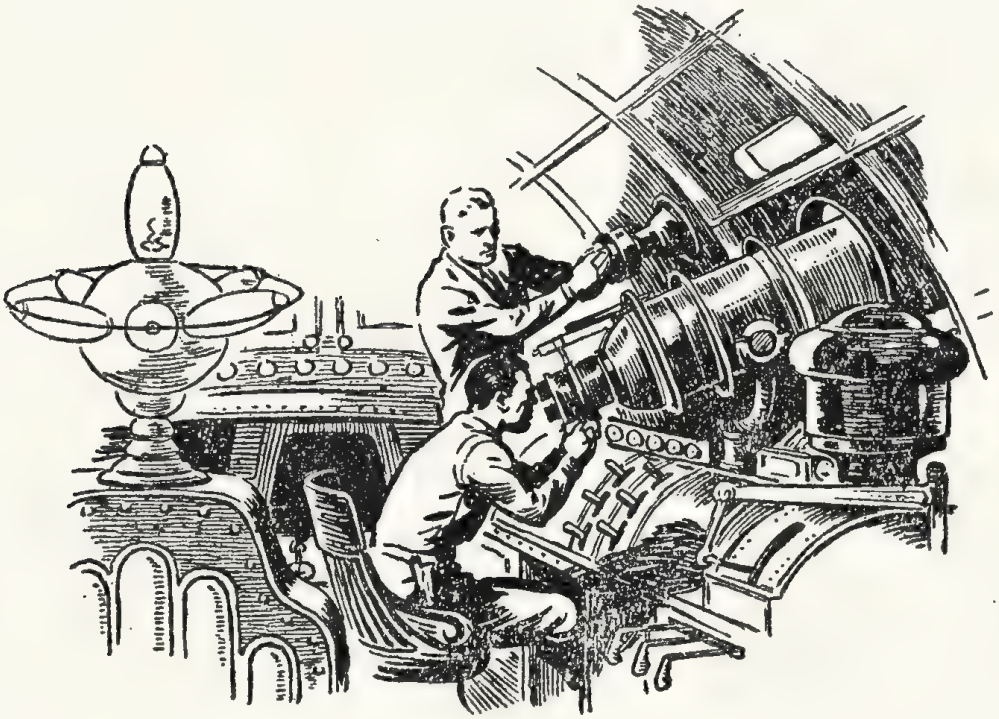
"Y'mean the one we used to find the *Empress?*"

"Uh-huh. Rig it without the adjustable mirror. Get me? D'you know what I want to do?"

"Yop. All we have to do is to clear away some of the saw grass again. Not too much, though, because it hasn't been too long since we cut it before. I get you all right."

"Fine. How soon?"

"I'm in the beam control dome North. I've got a portable mike, and I walk over to the adjustable mirror and begin to tinker with the moving screws. *Ouch!* I've skun me a knuckle. Now look, Don, I'm going inside and crack the passage end. I've broadcast throughout the Station that this is to be cracked, and the men are swarming



all over the axis of the Station doing just that. Come a-running!"

Channing circled the little ship high to the North and came down toward the axis of the Station. He accelerated fiercely for a portion of the time, and then made a slam-bang turnabout that caused some of the plates to complain. A pilot light on the instrument panel gleamed, indicating that some of the plates were strained and that the ship was leaking air. Another light lit, indicating that the automatic pressure control was functioning, and the pressure was maintained, though it might not be too long.

Then in deceleration, Channing fought the ship on to a die-straight line with the open door at the North end. He fixed the long, long passageway in the center of his sights, and prayed.

The ship hit the opening squarely, and only then did their terrific speed become apparent. Past bulkhead after bulkhead they drove, and a thin scream came to their ears as the atmosphere down in the bowels of the Station was compressed by the tiny ship's passage.

Doors slammed behind the ship as it passed, and air locks were opened, permitting the Station's center to fill to its normal pressure once more.

Then the rocketing ship slowed. Channing saw a flash of green and knew that the Martial saw grass was halfway down the three-mile length of the Station. He zipped past storeroom and rooms filled with machinery, and then the ship scraped lightly against one of the bulkheads.

It caromed from this bulkhead against the next, hitting it in a quartering slice. From side to side the ship bounced, crushing the bulkheads and tearing great slices from the flanks of the ship.

It slowed, and came to rest against a large room full of packing cases, and was immediately swarmed over by the men from the Relay Station.

They found Channing partly conscious. His nose was bleeding, but otherwise he seemed all right. Arden was completely out, though a quick check by the Station's medical staff assured Don that she would be all right as soon as they gave her a workout. He was leaving the center of the Station when Franks came puffing up the stairway from the next lowest level.

"Gosh," he said. "It's a real job trying to guess where you stopped. I've been hitting every hundred feet and asking. Well, that was one for the book."

"Yeah," groaned Don. "Come along, Walt. I want a shower. You can give the résumé of the activities whilst I'm showering and trying to soak this adhesive off. Arden, lucky girl, will be unconscious when the doc rips it off, but I never liked the way they remove tape."

"There isn't much to tell," said Franks. "But what there is, I'll tell you."

Channing was finishing the shower when Walt mentioned that it was too bad that they hadn't started his electron gun a few weeks sooner.

Don shut off the water, fumbled for a towel, and said: "What?"

Franks repeated.

Again Channing said: "What? Are you nuts?"

"No. I've been tinkering with an idea of mine. If we had another month to work on it, I think we might be able to clip Murdoch's ears."

"Just what are you using in this super weapon, chum?"

Franks explained.

"Mind if I put in an oar?" asked Channing.

"Not at all. So far we might be able to fry a smelt at twenty feet, or we could cook us a steak. But I haven't been able to do a thing yet. We had it working once, and I think we heated a meteor somewhat, but the whole thing went blooey before we finished the test. I've spent the last week and a half fixing the thing up again, and would have tried it out on the next meteor, but your message brought a halt to everything but cleaning up the mess and making ready just in case we might think of something practical."

"I'll put in my first oar by seeing the gadget. Wait 'til I find my pants, and I'll go right along."

Don inspected the installation and whistled. "Not half bad, sonny. Not half bad."

"Except that we haven't been able to make it work."

"Well, for one thing, you've been running on the wrong track. You need more power."

"Sure," grinned Walt. "More power, he says. I don't see how we can cram any more soup into this can. She'll melt."

"Walt, what happens in a big gun?"

"Powder burns; expanding products of combustion push—"

"Functionally, what are you trying to accomplish? Take it on the basis of a solid shot, like they used to use back in the sailing ship days."

"Well," said Walt thoughtfully, "I'd say they were trying to heave something large enough to do damage."

"Precisely. Qualifying that statement a little, you might say that the projectile transmits the energy of the powder charge to its objective."

"Right," agreed Walt.

"And it is possible to transmit that energy mechanically. I think if we reason this idea out in analogy, we might be able to do it electrically. First, there is the method. There is nothing wrong with your idea, funcionally. Elecron guns are as old as radio. They—"

The door opened and Arden entered. "Hi, fellows," she said. "What's cooking?"

"Hi, Arden. Like marriage?"

"How long do people have to be married before people stop asking that darned fool question?" asked Arden.

"O.K., how about your question?"

"I meant that. I ran into Warren who told me that the brains were down here tinkering on something that was either a brilliant idea or an equally brilliant flop—he didn't know which. What goes?"

"Walt has turned Buck Rogers and is now about to invent a ray gun."

"No!"

"Yes!"

"Here's where we open a psychopathic ward," said Arden sadly. So far, Venus Equilateral is the only community that hasn't had a village idiot. But no longer are we unique. Seriously, Walt?"

"Sure enough," said Channing. "He's got an idea here that may work with a little tinkering."

"Brother Edison, we salute you," said Arden. "How does it work?"

"Poorly. Punk. Lousy."

"Well, sound recording has come a long way from the tinfoil cylinder that scratches out: 'Mary had a little lamb!' And transportation has come along swell from the days of sliding sledges. You may have the nucleus of an idea, Walt. But I meant its operation instead of its efficiency."

"We have an electron gun of super size," explained Walt. "The cathode is a big affair six feet in diameter and capable of emitting a veritable storm of electrons. We accelerate them by means of properly spaced anodes of the proper voltage level, and we focus them into a nice bundle by means of electrostatic lenses—"

"Whoa, Tillie. You're talking like the Venerable Buck himself. Say that in language, please."

"Well, we work at swords' points whenever we try to accelerate electrons to high speeds and focus them at the same time," said Walt. "A voltage gradient will cause electrons to change their course like a lens, and with the usual trouble with inanimate things, it works the wrong way. In order to

accelerate the electrons emitted from the cathode, they are subjected to the attraction of an anode which is operating at a high positive potential. The electrons leave the cathode, and as they are attracted by the positive anode, they begin to move.

"Now it is common to speak of the velocity of an electron by stating the quantity of volts that the electron has fallen through. The higher the voltage difference between cathode and anode, the faster the electron will go.

"But the stream of electrons will be diverged if it falls through a field of increasing positive potential. In order to bring the stream to a focus, we must follow the first anode with another anode of a potential less than the first anode but still higher than the cathode. That bollixes up the works. It focuses the stream and slows it at the same time. So we follow this anode with another high positive electrode and speed them up again, and then focus them and so on until we get the required velocity. These anodes are shaped like rings so that their electrostatic effect will exist in the center of them; the beam passes through this center."

"In other words the ring-shaped electrodes are electrostatic lenses?"

"Nope. It is the space between them. The lens is either convex or concave depending upon whether the voltage gradient is from positive to less positive or if it is positive to more positive, respectively. In an electrostatic lens for electrons, the thing is not like a glass lens for light. Whether your lens is diverging or converging depends upon which way your electron stream is running through it. With light, a convex lens will converge the light no matter which direction the light is coming from."

"Uh-huh. I see in a sort of vague manner. Now, fellows, go on from there. What's necessary to make this dingbat tick?"

"I want to think out loud," said Channing.

"That's nothing unusual," said Arden. "Can't we get into Joe's? You can't think without a tablecloth, either."

"What I'm thinking is this, Walt. You've been trying to squirt electrons like a fireman runs a hose. Walt, how long do you suppose a sixteen-inch rifle would last if the explosives were constantly replaced and the fire burned constantly?"

"Not long," admitted Walt.

"A gun is an overloaded machine," said Don. "Even a little one. The life of a gun barrel is measured in seconds; totaling up the time of transit of all the rounds from new barrel to worn gun gives a figure expressed in seconds. Your electron gun, Walt, whether it be fish, flesh, or fowl, must be overloaded for an instant."

"Is overload a necessary requirement?" asked Arden. "It seems to me that you might be able to bore a sixteen-inch gun for a twenty-two. What now, little man?"

"By the time we get something big enough to do more than knock paint off, we'll have something bigger than a twenty-two," grinned Channing. "I was speaking in terms of available strength versus required punch. In the way that a girder will hold tremendous overloads for brief instants, a gun is extremely overloaded for milliseconds. We'll have a problem—"

"O.K., aside from that, have you figured out why I haven't been able to do more than warm anything larger than a house brick?"

"Sure," laughed Channing. "What happens in a multigrid radio tube when the suppressor grid is hanging free?"

"Charges up and blocks the electron stream . . . hey! That's it!"

"What?" asked Arden.

"Sure," said Walt. "We fire off a batch of electrons, and the first contingent that arrives charges the affair so that the rest of the beam sort of wriggles out of line."

"Your meteor is going to take on a charge of phenomenal negative value, and the rest of your beam is going to be deflected away, just as your electron lenses deflect the original beam," said Channing. "And now another thing, old turnip. You're squirting out a lot of electrons. That's much amperage. Your voltage—velocity—is nothing to rave about. Watts is what you want, to corn a phrase."

"Phew," said Walt. "Corn, he says. Go on, prodigy, and make with the explanations. I agree, we should have more voltage and less quantity. But we're running the stuff at plenty of voltage now. Nothing short of a Van Der Graf generator would work—and while we've got one up on the forty-ninth level, we couldn't run a supply line down here without reaming a fifty-foot hole through the Station, and then I don't know how we'd get that kind of voltage down here without . . . that kind of stuff staggers the imagination. You can't juggle a hundred million volts on a wire. She'd squirt off in all directions."

"Another thing, whilst I hold it in my mind," said Channing thoughtfully. "You

go flinging electrons off the Station in basketful after basketful, and the next bird that drops a ship on the landing stage is going to spot-weld himself right to the South end of Venus Equilateral. It wouldn't be long before the Station would find itself being pulled into Sol because of the electrostatic stress—if we didn't run out of electrons first!"

"I hardly think that we'd run out—but we might have a tough time flinging them away after a bit. Could be that we should blow out a fist full of positrons at the same time?"

"Might make up a concentric beam and wave the positive ions at the target," said Channing. "Might help."

"But this space-charge effect. How do we get around that?"

"Same way we make the electron gun work. Fire it off at a devilish voltage. Run your electron velocity up near the speed of light; the electrons at that speed will acquire considerable mass, in accordance with Lorenz's equation which shows that as the velocity of a mass reaches the speed of light, its mass becomes infinite. With a healthy mass built up by near-light velocities, the electrons will not be as easy to deflect. Then, too, we can do the damage we want before the charge can be built up that will deflect the stream. We ram 'em with a bundle of electrons moving so fast that the charging effect can not work; before the space charge can build up to the level required for self-nullification of our beam, the damage is done."

"And all we need is a couple of trillion volts. Two times ten to the twelfth power. *Grrr.*"

"I can see that you'll need a tablecloth," said Arden. "You birds can think better over at Joe's. Come along and feed the missus, Don."

Channing surveyed the instrument again, and then said: "Might as well, Walt. The inner man must be fed, and we can wrangle at the same time. Argument assists the digestion—and vice versa."

"Now," said Channing, as the dishes were pushed aside, clearing a space on the table. "What are we going to do?"

"That's what I've been worrying about," said Walt. "Let's list the things that make our gun ineffective."

"That's easy. It can't dish out enough. It's too dependent upon mobility. It's fundamentally inefficient because it runs out of ammunition too quick, by which I mean that it is a sort of gun with antiseptic bullets. It cures its own damage."

"Prevents," said Arden.

"All right, it acts as its own shield, electrostatically."

"About this mobility," said Walt, "I do not quite agree with that."

"You can't whirl a hunk of tube the size and weight of a good-sized telescope around fast enough to shoot holes in a racing spaceship," said Channing. "Especially one which is trying to dodge. We've got to rely upon something that can do the trick better. Your tube did all right following a meteor that runs in a course that can be predicted, because you can set up your meteor spotter to correct for the mechanical lag. But in a spaceship that is trying to duck your shot, you'll need something that works with the speed of light. And, since we're going to be forced into something heavy and hard-hitting, its inertia will be even more so."

"Heavy and hard-hitting means exactly what?"

"Cyclotron or betatron. One of those dingusses that whirls electrons around like a stone on a string until the string breaks and sends the stone out at a terrific speed. We need a velocity that sounds like a congressional figure."

"We've got a cyclotron."

"Yeah," drawled Channing. "A wheezy old heap that cries out in anguish every time the magnets are charged. I doubt that we could move the thing without it falling apart. The betatron is the ticket."

"But the cyclotron gives out with a lot more soup."

"If I had to increase the output of either one, I could do it a lot quicker with the betatron," said Channing. "In a cycotron, the revolution of the electrons in their acceleration period is controlled by an oscillator, the voltage output of which is impressed on the D chambers. In order to speed up the electron stream, you'd have to do two things. One: Build a new oscillator that will dish out more power. Two: Increase the strength of the magnets.

"But in the betatron, the thing is run differently. The magnet is built for A.C. and the electron gun runs off the same. As your current starts up from zero, the electron gun squirts a bouquet of electrons into a chamber built like a pair of pie plates set rim to rim. The magnet's field begins to build up at the same time, and the resulting increase in field strength accelerates the electrons and at the same time, its increasing

field keeps the little devils running in the same orbit. Shoot it with two-hundred-cycle current, and in the half cycle your electrons are made to run around the center a few million times. That builds up a terrific velocity—measured in six figures, believe it or not. Then the current begins to level off at the top of the sine wave, and the magnet loses its increasing phase. The electrons, still in acceleration, begin to whirl outward. The current levels off for sure and begins to slide down—and the electrons roll off at a tangent to their course. This stream can be collected and used. In fact, we have a two-hundred-cycle beam of electrons at a couple of billion volts. That, brother, ain't hay!"

"Is that enough?"

"Nope."

"Then how do you hope to increase this velocity? If it is easier to run this up than it would be the cyclotron, how do we go about it?"

Channing smiled and began to draw diagrams on the tablecloth. Joe looked over with a worried frown, and then shrugged his shoulders. Diagrams or not, this was an emergency—and besides, he thought, I need another lesson in high-powered gadgetry.

"The nice thing about this betatron," said Channing, "is the fact that it can and does run both ends on the same supply. The current and voltage phases are correct so that we do not require two supplies which operate in a carefully balanced condition. The cyclotron is one of the other kinds; though the one supply is strictly D.C., the strength of the field must be controlled separately from the supply to the oscillator that runs the D plates. You're sitting on a fence, juggling knobs and stuff all the time you are bombarding with a cyc.

"Now let us inspect the supply of the betatron. It is sinusoidal. There is the catch. There is the thing that makes it possible. that single fact makes it easy to step the power up to terrific quantities. Since the thing is fixed by nature so that the input is proportional—electron gun initial velocity versus magnetic field strength, if we increase the input voltage, the output voltage goes up without having to resort to manipulistic gymnastics on the part of the operator."

"Go on, Professor Maxwell."

"Don't make fun of a great man's name," said Arden. "If it wasn't for Clerk Maxwell, we'd still be yelling out of the window at one another instead of squirting radio beams all over the Solar System."

"Then make him quit calling me Tom Swift."

"Go on, Don, Walt and I will finish this argument after we finish Hellion Murdoch.

"May I?" asked Channing with a smile. He did not mind the interruption; he was used to it in the first place and he had been busy with his pencil in the second place. "Now look, Walt, what happens when you smack a charged condenser across an inductance?"

"You generate a damped cycle of the amplitude of the charge on the condenser, and of frequency equal to the L, C, constants of the condenser and inductance. The amplitude decays according to the factor Q, following the equation for decrement—"

"Never mind, I've got it here on my whiteboard," smiled Channing, pointing to the tablecloth. "You are right. And the purity of the wave?"

"Sinusoidal . . . hey! That's it!" Walt jumped to his feet and went to the telephone.

"What's 'it'?" asked Arden.

"The betatron we have runs off of a five-hundred-volt supply," chuckled Channing. "We can crank that up ten to one without running into any difficulty at all. Five-hundred-volt insulation is peanuts, and the stuff they put on wires nowadays is always good for ten times that just because it wouldn't be economical to try to thin the insulation down so that it only protects five hundred. I'll bet a bat that he would crank the input up to fifty thousand volts without too much sputtering—though I wouldn't know where to lay my lunch hooks on a fifty-thousand-volt condenser of any appreciable capacity. Well, stepping up the rig ten to one will dish us out just shy of a couple of thousand million volts, which, as brother Franks says, is not hay!"

Walt returned after a minute and said: "Warren's measuring the inductance of the betatron magnet. He'll calculate the value of C required to tune the thing to the right frequency and start to achieve that capacity by mazing up whatever high-voltage condensers we have on the Station. Now, Don, let's calculate how we're going to make the thing mobile."

"That's a horse of a different color. We'll have to use electro-magnetic deflection. From the constants of the electron stream out of our souped-up Suzy, we'll have to compute the necessary field to deflect such a beam. That'll be terrific, because the electrons are hitting it up at a velocity approaching that of light—maybe a hundred

and seventy thousand miles per—and their mass will be something fierce. That again will help to murder Murdoch; increasing mass will help to keep the electrons from being deflected, since it takes more to turn a heavy mass—et cetera, see Newton's laws of inertia, for complete statement. Have 'em jerk the D plates out of the cyc and bring the magnet frame down here—to the turret, I mean—and set 'em up on the vertical. We'll use that to run the beam up and down, we can't possibly get one hundred and eighty degree deflection, of course, but we can run the deflection over considerable range. It should be enough to catch a spaceship that is circling the Station. For the horizontal deflection, what have we got?"

"Nothing. But the cyc magnet is a double pole affair. We could break the frame at the D plates and set one winding sidewise to the other and use half on each direction."

"Sure. Have one of Warren's gang fit the busted pole pieces up with a return-magnetic frame so that the field will be complete. He can weld some girders on and around in an hour. That gives us complete deflection properties left and right; up and down. We should be able to cover a ninety-degree cone from your turret."

"That'll cover all of Murdoch's ships," said Walt.

"Too bad we haven't got some U_{235} to use. I'd like to plate up one of his ships with some positive ions of U_{235} and then change the beam to slow neutrons. That might deter him from his life of crime."

"Variations, he wants," said Arden. "You're going to impale one ship on a beam of electrons, one ship on a beam of U_{235} ions; and what will you have on the third?"

"I'll think of something," said Channing. "A couple of pounds of U_{235} should make things hum, though."

"More like making them disappear," said Franks. *"Swoosh!* No ship. Just an incandescent mass falling into the Sun. I'm glad we haven't got U_{235} in any quantity out here. We catch a few slow neutrons now and then, and I wouldn't be able to sleep nights. The things just sort of wander right through the Station as though it weren't here at all; they stop just long enough to register on the counter upstairs and then they're gone."

"Well, to work, people. We've got a job to do in the next three and a half days."

Those days were filled with activity Hauling the heavy parts down to the turret was no small job, but it was accomplished after a lot of hard work and quite a bit of tinkering with a cutting torch. The parts were installed in the outer skin, and the crew with the torch went back over their trail and replaced the gaping holes they left in the walls and floors of Venus Equilateral. The engineering department went to work, and for some hours the place was silent save for the clash of pencil on paper and the scratching of scalps. The most popular book in the Station became a volume on nuclear physics, and the second most popular book was a table of integrals. The stenographic force went to work combing the library for information pertaining to electronic velocities, and a junior engineer was placed in as buffer between the eager stenographers and the harried engineering department. This was necessary because the stenographers got to the point where they'd send anything at all that said either "electrons" or "velocity," and one of the engineers read halfway through a text on atomic structure before he realized that he had been sold a bill of goods. Wire went by the mile down to the turret, and men proceeded to blow out half of the meters in the Station with the high-powered beam. Luckily, the thing was completely nonspectacular, or Murdoch might have gained an inkling of their activities. The working crew manipulated constants and made haywire circuits, and finally announced that the beam would deflect—if the calculations were correct.

"They'd better be," said Channing. He was weary. His eyes were puffed from lack of sleep, and he hadn't had his clothing off in three days.

"They are," said Franks. He was in no better shape than Don.

"They'd better be right," said Channing ominously. "We're asking for a kick in the teeth. The first bundle of stuff that leaves our gun will energize Murdoch's meteor spotter by shear electrostatic force. His gun mounts, which you tell me are coupled to the meteor detector for aiming, will swivel to cover the turret out here. Then he'll let us have it right in the betatron. If we don't get him first, he'll get us second."

"Don," said Walt in a worried voice. "How are we going to replace the charge on the Station? Like the bird who was tossing baseballs out of the train—he quit when he ran out of them. Our gun will quit cold when we run out of electrons—

or when the positive charge gets so high that the betatron can't overcome the electrostatic attraction."

"Venus Equilateral is a free grid," smiled Channing. "As soon as we shoot off electrons, Old Sol becomes a hot cathode and our Station collects 'em until the charge is equalized again."

"And what happens to the bird who is holding on to something when we make off with a billion volts? Does he scrape himself off the opposite wall in a week or so—after he comes to—or can we use him for freezing ice cubes? Seems to me that it might be a little bit fatal."

"Didn't think of that," said Channing. "There's one thing, their personal charge doesn't add up to a large quantity of electricity. If we insulate 'em and put 'em in their spacesuits, they'll be all right as long as they don't try to grab anything. They'll be on the up and down for a bit, but the resistance of the spacesuit is high enough to keep 'em from draining all their electrons out at once. I recall the experiments with early Van Der Graf generators at a few million volts—the operator used to sit in the charged sphere because it was one place where he couldn't be hit by man-made lightning. It'll be rough, but it won't kill us. Spacesuits, and have 'em sit in plastic chairs the feet of which are insulated from the floor by china dinner plates. This plastic wall covering that we have in the apartments is a blessing. If it were all bare steel, every room would be a miniature hell. Issue general instructions to that effect. We've been having emergency drills for a long time, now's the time to use the grand collection of elastomer spacesuits. Tell 'em we give 'em an hour to get ready."

Hellion Murdoch's voice came over the radio at exactly the second of the expiration of his limit. He called Channing and said:

"What is your answer, Mr. Channing?"

Don squinted down the pilot tube of the meteor spotter and saw the *Hippocrates* passing. It was gone before he spoke, but the second ship came along, and the pilot tube leaped into line with it. Don checked meters on the crude panel before him, and then pressed the plastic handle of a long lever.

There was the crash of a heavy-duty oil switch.

That was all.

Crackles of electricity flashed back and forth through the Station, and the smell of ozone arose. Electric light filaments leaned over crazily, trying to touch the inner walls of the glass. Panes of glass ran blue for an instant, and the nap of the carpets throughout the Station stood bolt upright. Hair stood on end, touched the plastic helmet dome, discharged, fell to the scalp, raised again and discharged. fell once more, and then repeated this raising and falling, again and again and again. Electric clocks ran crazily, and every bit of electronic equipment on the Station began to act in an unpredictable manner.

Then things settled down again as the solar emission charged the Station to equilibrium.

Aboard the ship, it was another story. The celestial globe of the meteor spotter blazed once in a blinding light and then went completely out of control. It danced with pin points of light, and the coupler that was used to direct the guns went crazy. Turrets tried to swivel, but the charge raised hob with the electronic controls, and the guns raised once and then fell, inert. One of them belched flame and fire, and the shell went wild. The carefully balanced potentials in the driver tubes was upset, and the ship lost headway. The heavy ion stream from driving cathode bent and spread, touching the dynodes in the tube. The resulting current brought them to a red heat, and they melted down and floated through the evacuated tube in round droplets. Instruments went wild, and gave every possible answer, and the ship became a bedlam of ringing bells and flashing danger lights.

But the crew was in no shape to appreciate the display. From metal parts in the ship there appeared coronas that reached for the unprotected men, and seared their flesh. And since their gravity-apparent was gone, they floated freely through the air, and came in contact with highly charged walls, ceiling, and floor; to say nothing of the standard metal furniture.

It was a sorry bunch of pirates that found themselves in a ship-without-motive-power that was beginning to leave their circular course on a tangent that would let them drop into the Sun.

"That's my answer, Murdoch!" snapped Channing. "Watch your second ship!"

"You young devil," shouted Murdoch, "what did you do?"

"You never thought that it would be an electronics engineer that made the first energy gun, did you, Murdoch? I'm now going to take a shot at No. 3!"

No. 3's turrets swiveled around and from the guns flashes of fire came streaming. Channing punched his lever savagely, and once again the Station was tortured by the effects of its own offensive.

Ship No. 3 suffered the same fate as No. 2.

Then, seconds later, armor-piercing shells began to hit Venus Equilateral. They hit, and because of the terrific charge, they began to arc at the noses. The terrible current passed through the fuses, and the shells exploded on contact instead of boring inside before detonation. Metal was bent and burned, but only a few tiny holes resulted. As the charge on the Station approached equilibrium once more, men ran with torches to seal these holes.

"Murdoch," said Channing, "I want you!"

"Come and get me."

"Land—or die!" snapped Channing in a vicious tone. "I'm no humanitarian, Murdoch. You'd be better off dead!"

"Never," said Hellion Murdoch.

Channing punched the lever for the third time, but as he did, Murdoch's ship leaped forward under several G. The magnets could not change in field soon enough to compensate for this change in direction, and the charge failed to connect as a bull's-eye. It did expend some of its energy on the tail of the ship. Not enough to cripple the vessel, but the *Hippocrates* took on a charge of enough value to make things hard on the crew.

Metal sparked, and instruments went mad. Meters wound their needles against the end pegs. The celestial globe glinted in a riot of color and then went completely dead. Gun servers dropped their projectiles as they became too heavily charged to handle, and they rolled across the turret floors, creating panic in the gun crews. The pilot fought the controls, but the charge on his driver tubes was sufficient to make his helm completely unpredictable. The panel sparked at him and seared his hands, spoiling his nervous control and making him heavy-handed.

"Murdoch," cried Channing in a hearty voice, "that was a miss! Want a hit?"

Murdoch's radio was completely dead. His ship was yawing from side to side as the static charges raced through the driver tubes. The pilot gained control after a fashion, and decided that he had taken enough. He circled the Station warily and began to make a shaky landing at the South end.

Channing saw him coming, and with a glint in his eye, he pressed the lever for the fourth and last time.

Murdoch's ship touched the landing stage just after the charge had been driven out into space. The heavy negative charge on the *Hippocrates* met the heavy positive charge on Venus Equilateral. The ship touched, and from that contact, there arose a cloud of incandescent gas. The entire charge left the ship at once, and through that single contact. When the cloud dissipated, the contact was a crude but efficient welded joint that was gleaming white-hot.

Channing said to Walt: "That's going to be messy."

"Inside of the *Hippocrates*, men were still frozen to their handholds. It was messy, and cleaning up the *Hippocrates* was a job not relished by those who did it.

But cleaning up Venus Equilateral was no small matter either.

Weeks went by before the snarled-up instruments were repaired. Weeks in which the captured *Hippocrates* was repaired, too, and used to transport material and special supplies from Terra, and Venus, and Mars. Weeks in which the service from planet to planet was interrupted and erratic.

Then one day, service was restored, and life settled down to a reasonable level. It was after this time that Walt and Channing found time to spend an idle hour together. Walt raised his glass and said: "Here's to electrons!"

"Yeah," grinned Channing. "Here's to electrons. Y'know, Walt, I was a little afraid that space might become a sort of wild West show, with the ships bristling with space guns and betatrons and stuff like that. In which case you'd have been a stinking benefactor. But if the recoil is as bad as the output—and Newton said that it must be—I can't see ships cluttering up their insides with stuff that'll screw up their instruments and driver tubes. But the thing that amuses me about the whole thing is the total failure you produced."

"Failure?" asked Walt. "What failed?"

"Don't you know Have you forgotten? Do you realize that spaceships are still ducking around meteors instead of blasting them out of the way with the Franks Electron Gun? Or did you lose sight of the fact that this dingbat started out in life as a meteor-sweeper "

Walt glared over the rim of his glass, but he had nothing to say.

The Beast

By A. B. van Vogt

Given time, even a fumble-witted Neanderthal could learn to be a sly and deadly opponent. And The Beast had had time—and was master over a long-forgotten power—

PENDRAKE passed under the corner archway of the drugstore, emerged onto Fiftieth Street—and stopped short.

The twin aerogel towers across the street looked strangely bare and different. Pendrake stared blankly for a moment before he saw what was wrong: The plasto-glitter sign was gone, the sign that had read:

CYRUS LAMBTON

LAND SETTLEMENT PROJECT

Slightly more than two years had passed since that day in August, 1948, when he had found an atomic engine in the hillside near Crescentville, slightly less than two years since he had traced the marvelous machine to these turreted towers and to a group of scientists who were secretly operating spaceships to Venus, carrying emigrants to that fantastically lovely and fertile planet under an idealistic plan of their own.

Three times he had been to Venus himself after Eleanor and he resumed their badly shattered married life. But now for nearly a year Eleanor had required constant attention.

The baby was born dead. Eleanor in her intense fashion was still taking it hard; and the doctor advised a change of scene. What better place than Venus: so here he was to make the arrangements. Funny if the scientists had suspended emigration to that glorious planet without advising him. From the moment of discovery they had treated him as one of themselves.

Frowning, Pendrake crossed the street and peered through the window. But the smaller sign that had once graced its interior, giving accurate yet carefully worded details to prospective emigrants—that sign was gone, too.

Beyond the window frame, considerably beyond, a woman sat at a desk. Her back was to him, but one glance showed that she was not Mona Grayson, the daughter of the inventor of the atomic engine.

Mona Grayson had been small, slight of build. This woman was broad in every beam right down to her thick ankles.

Shrugging, Pendrake went to the door. It opened at the barest touch of that strong hand of his.

"Bin dere anyting you vant?"

The broad German accent was like a slap in the face. Pendrake halted, then slowly walked around to the front of the woman's desk. He stood there staring at her.

She had a plump face, dark hair, dark eyes; and after a moment the very grossness of her appearance, the very unvarnished quality of her guttural, broken English brought easement to his strained nerves.

She might be Jewish; and besides, what the devil anyway? There had been plenty of refugee scientists and their families. For all he knew, this was a member of such a family. He caught himself.

"Is Dr. Grayson in "

"Vot name shall I gif?"

Pendrake winced. "Pendrake," he said grudgingly. "Jim Pendrake."

"Vrom vere?"

Pendrake made an impatient gesture with his single arm toward the closed door that led to the other tower. "Is he in there?"

"I vill send your name in if you vill tell me vere you are vrom! Mr. Birdman vill explain everyt'ing to you."

"Mr. what?"

"Vun moment, und I vill call him."

Pendrake tensed. There was something wrong, just what, wasn't clear. And this comic-opera caricature of an information girl wasn't helping matters. For some reason Grayson and the others had given up these towers as a center of interplanetary activity, and a bunch of Germans had taken over the building.

He looked up with abrupt decision. "Don't bother to call anyone. I can see I've made a mistake. I—"

He paused, closed his eyes, then opened them again. The pearl-handled revolver was still peering at him over the edge of the woman's desk.

"If you make vun moof," she said, "I will shoot you mit dis noiseless gun."

A stocky man came into view. He had sandy hair, and freckles; his gaze played swiftly over Pendrake, lingered momentarily on the latter's empty right sleeve, then he said softly in perfectly colloquial American:

"Good work, Lena. I was just beginning to think we'd gathered up all the threads, and now here comes another. We'll put him in a spacesuit, ship him by truck to Field A. There's a plane due there in half an hour. We can quiz him later on. He must have a wife and maybe some friends—"

After an hour, the horrible, jarring ride was over; the chains were taken off the suit that inclosed Pendrake. As he sat up dizzily, he saw a house and other buildings, and standing among them a small cabin-model, propellerless plane.

One of the truckmen motioned with a gun. "Get over there."

Three men were in the plane. They wore the same kind of metal-plastic suits as Pendrake had, and they said nothing as he was pushed aboard.

One of them indicated a seat; the man at the controls pushed a lever and, soundlessly, the machine began to move forward—and up. The utter silence of the immensely potent movement was all Pendrake needed. Here was a Grayson atomic engine.

With startling suddenness the sky grew dark-blue. The sun lost its roundness and became a shape of flaring fire in a universe of night.

Behind the plane the Earth began to show its roundness. Ahead glittered a growing orb of moon.

The phone lights misted: "Birdman speaking, excellency."

The ice-cold voice at the other end said: "You will be glad to know that after only three days we have all the necessary data on the man, Pendrake. As you know, it is imperative that we locate for questioning every person who might have some knowledge of the Grayson atomic engine, and do so without creating the slightest suspicion against ourselves. You will, therefore, carry out the following orders with respect to Mrs. Grayson—"

The misty light faded slowly; and the stocky Birdman shook himself like an animal coming in out of drenching rain.

He walked swiftly to a cabinet in one corner of his office. It opened at his touch. Liquor bottles gleamed at him. Almost without looking he snatched one, and poured himself a glass of amber stuff—drained it at a gulp.

He shuddered as the violent concoction billowed inside him, and then slowly he returned to his desk. Funny, he thought, how the sound of *his* voice always affected him so strongly.

II.

MANIAC KILLS SERVANTS, KIDNAPS WIFE. EX-AIRMAN JAMES PENDRAKE SLAYS FIVE. IS DRAMATICALLY ACCUSED IN NOTE WRITTEN BY DEAD SERVANT.

Crescentville, Aug. 23—In a dramatic note, written by a maid servant as she lay dying, James Pendrake, one-armed former airman and husband of Eleanor Pendrake, was accused of murder and kidnaping. The story of the only other witness to the crime, Major Ned Hoskins, Washington patent attorney and friend of the Pendrakes, has not yet been released by Air Force authorities who—

"Major Hoskins," said the Air Force officer presiding, "just how far were you from the white house on the Pendrake estate when you first noticed something wrong?"

"About two hundred yards," Hoskins said quietly.

"Under what circumstances were you there."

"I had received a most confused phone call from Mrs. Pendrake. Her husband had been away three days without calling her, and her calls to his hotel in New York had produced the information that he hadn't been in his room since the day of his arrival.

"She then, she informed me, called up several friends and—this is where my confusion comes in—the people involved were all dead or missing. She babbled something about an atomic engine, and an organization that was transporting emigrants to Venus."

"She was quite hysterical, was she?"

"I would say so, yes. I told her finally that I would fly up that afternoon to see her."

"Just what is your relation to the Pendrakes?"

"Pendrake and I were in the same air squadron in China. However, we quarreled two years ago over something significantly related to what has happened here."

"Explain yourself."

"He came to my office two years ago

and told me he had found a remarkable engine. However, it had been stolen from him by force, and he was anxious to trace the ownership. I took Air Commissioner Blakeley down to see him; and he insulted Blakeley in such a fashion that I broke off our friendship. I suppose Blakeley and I should have realized there was more behind Pendrake's refusal to talk than bad manners, but I must admit I was too furious to reason about it.

"I subsequently regretted my ill-temper, but I didn't quite know what I could do about it. You may check all this with Blakeley. I believe he is ill at the moment."

"Yes. At what time did you arrive at Crescentville?"

"About half past three."

"What did you do?"

"I couldn't find a taxi. Walking along the main street, I suddenly noticed there was a LETSTOP meeting at the church. Unfortunately, I didn't have my masks with me, but I went in and spent ten minutes describing what had happened to me in a Jap prison camp."

"It was after this meeting that you went to see Mrs. Pendrake?"

"Yes."

"You walked?"

"It was less than a mile, and very pleasant, mostly under trees; and I reached the little bridge which crosses Pendrake Creek about two hundred and fifty yards from the house at twenty-eight minutes after four. I know that was the time because I looked at my watch. A minute later I emerged from the shelter of the trees and there was the Puma cabin plane drawn up on the road in front of the house, as I have already described in a written statement."

"I'm using that as a basis for my questioning. The sight of the plane surprised you?"

"It did. I couldn't see how it had landed. The road offered no runway to speak of. And then I saw that it had no propeller. That made me think it must have been there for quite a while.

"It is that propellerless part of your story I want to question you about. But first—what happened next?"

"Horrible screaming of women followed by the clatter of machine guns." Hoskins shuddered. "I can just picture those women suddenly realizing they were going to be murdered."

"What then?"

"Four men came out, one of them carrying the limp body of a young woman."

"You recognized her as Mrs. Pendrake?"

"No, it was too far to see faces. I only assume now that it was she."

"Ah! Enters the element of doubt. It was too far. You couldn't recognize faces—or the presence of propellers?"

"I didn't say that!"—sharply.

"All right, all right, let that pass. The four men emerged from the house, climbed into the plane with a woman and—"

"The plane made a run measurable in feet, then rose straight up into the air."

"Ah, yes, yes. But let's skip that, too, for the moment and return to the men. Was one of the murderers a one-armed man?"

"I don't think so."

"But you won't swear it?"

"I am convinced I would have noticed. When I first learned two years ago that Pendrake had lost his right arm in a crash, it was a great shock to me. You may recall that Pendrake was the Air Force's Man of Steel. He was the greatest physical personality of the war. Knobs came off when he opened doors hastily. When he was excited, objects he was holding lost their shape. He—"

"But you won't swear he wasn't there?"

"No-o!"—reluctantly. "I was lying in the ditch in a very amazed frame of mind."

"In the ditch—you weren't being very brave!"

"To the contrary, I felt no fear. I saw everything that happened with absolute clarity."

"But you were in the ditch, safe?"

"I was indeed. If I had been excited, I would probably have dashed forward to my death. As it is I am here alive, an earnest testimonialist to an astounding event. I saw a propellerless plane shoot up into the air like a bullet."

"We'll come to that. What did you do when the plane had departed?"

"I rushed forward and into the house intending to phone Crescentville. In the hallway I stumbled over the body of the first woman. In quick succession I found the bodies of two men, a big Negress and a maid. It was the maid who was clutching the note, in which Pendrake is accused of the crime, an obvious frame-up because the girl didn't have time to write anything."

"The frame-up is not so obvious to the rest of us. But let us go on. You—"

The stocky man reached the hotel through the secret entrance. He felt himself scruti-

nized, but finally the door swung open. He was led along a corridor. A few minutes later he was in the inner sanctum.

"Excellency!" He bowed.

The tall, gaunt man stared at him from eyes that were like shining holes in his head, so hard and bright were they.

"Herr Birdman, I have seen the newspapers. There was a witness."

The stocky man gurgled: "How could the men know? The accident was as mindless as our discovery of all this. Hoskins' presence at that moment—"

"I am not interested in reasons. However"—the cold voice thawed—"I have been reliably informed that Air Force higher-ups regard Hoskins' story as fantastic. They favor the more rational explanation that Hoskins was not half so calm as he tried to make out. In any event they haven't the faintest idea what to do.

"Major Hoskins remains a danger center. But killing him might kindle an interest in his story that he himself, living, cannot arouse.

"There are still a few problems. We must remain alert, prepared for drastic action. But on the whole I think we are justified in drinking to the successful conclusion of what might have been a dangerous incident."

Birdman accepted the proffered glass, and waited as the glittering eyes measured him. Finally, the man's bony hand came up; his voice rang out:

"To final victory—Heil Hitler!"

"Heil Hitler!" Birdman echoed.

Afterward he babbled wanly: "I admit, when I saw there had been a witness, I was worried. There seemed a destiny in that which seemed to lead straight toward the Shaposhenko—"

He stopped short. The smoldering eyes were like pools of fire glaring at him. The stocky man shivered.

"Heil Hitler," he said hastily. "All I meant was—"

He was cut off, icily: "This fear of the Shaposhenko punishment," said the steely voice, "is one which I shall not tolerate. You may go."

Birdman went.

III.

He was lying in darkness.

Pendrake frowned. He remembered the fight with the three Nazis—silly fools, they hadn't considered a one-armed man dangerous—and he remembered the crash landing on the Moon.

He hadn't planned the crash. But things had happened swiftly; and in the final issue there wasn't time to learn exactly how the German controls of the space drive worked.

Yet, the crash and what preceded it was clear enough. It was the darkness that—

Pitch-black it was; and space hadn't been like that. Space had been a velvet curtain pierced with tiny brilliants; and the sun flashing and flaring through the portholes of the hurtling plane— Darkness, but not like this.

Pendrake frowned again. And with sudden will he tried to move his arm.

It moved reluctantly, as if quicksand was clinging to it. Or as if it were buried in sand—

His mind leaped in an immense comprehension. Powdered pumice stone! He was lying in a "sea" of settled stone dust somewhere on the side of the Moon that eternally faced away from Earth; and all he had to do—

He burst up out of the prison of dust and stood blinking in the ghastly glare of the sun. His heart sank. He was in a vast desert. A hundred yards to his left a plane wing protruded from the sand. To his right, about a third of a mile, was a long low ride across which the sun's rays fell slantwise, creating dense shadows.

The rest was desert. As far as his eyes could see was that dead level of pulverized pumice. Pendrake's gaze returned to the exposed wing, and with a stark intensity he thought: "The engine!"

He began to run. His strides were long and bouncy, but he knew from past experience what low gravity was like. And after a moment; now that hope had come, even the consciousness of low-weight became a dim force at the back of his mind.

For there was hope. Damage to the structure of this supership didn't matter. Wings could be torn off, body smashed and bent. But so long as the engine and the drive shaft were intact and attached, the plane would fly.

It was the almost vertical tilt of the wing that fooled him. He used a loose metal plate and excavated doggedly for what must have been half an hour. And then he came to the torn end of the wing.

There was nothing below, no plane, no engine, no tail gear—nothing but pulverized pumice.

The wing poked up into the sky, a mute

remnant of a plane that had somehow shed a part of itself, and then soared off into eternity. If the laws of chance meant anything, the plane and its engine would fly on forever through space.

But there was still a chance. Pendrake began to walk hurriedly toward the ridge. The slopes of the ridge were steeper than he had estimated; and they were buried in black shadows. Hard to see; he kept sliding back, the loose-packed dust coming down in little rushes. After minutes of effort, he was still only halfway to the top of the two-hundred-foot hill.

And it was getting cold. At first the chill hardly touched him, but it swiftly became a biting cold that pressed against his skin, and began to steal inside clammily.

Within minutes his whole body was numbed, his teeth chattering. He thought in stark amazement: The suit, the damnable suit must be so constructed as to distribute evenly the direct and terrible heat of undiffused sunlight, with no allowance at all for cold.

He reached the top of the ridge, and stood with closed eyes facing into the full blaze of the low-hung sun; sluggishly the warmth began to flow back into his veins; he remembered his hope, and looked around, looked long and with a gathering desperation.

But the plane hadn't merely dropped its wing, and then crashed at some near point. In all his scope of vision, the flat reach of pumice sea was unbroken except for seven craters that reared up bleakly in the far distance, like witches' mouths sucking at the sky.

He had walked for over an hour toward them, the metal plate "shovel" still clutched in his fingers, before it came to Pendrake suddenly that the sun was lower in the sky than it had been.

Night was falling.

He was one man alone running from crater to crater while a fantastically flaring sun sank lower and lower in a sky that was darker than the midnight heavens of Earth. The extinct volcanoes were all small, the largest only about three hundred yards across.

The long shadows from the slanting rays of the sun fell across those crater bottoms; it was only by light reflections from the walls that Pendrake was able to see that here, too, the pumice ocean had spread its silent, enveloping waves of dust.

Two—four, five craters; and still there was no sign of what he was looking for. As with the others, he climbed the sixth from the sunny side, and then stood sickly peering down in the black shadows of the shallow pit that spread before him.

Pumice, ragged edges of lava, protruding piles of rock that were darker than the shadows that engulfed them—it was all such a familiar pattern now that his eyes made automatic assessment and flashed on in a dull dismay.

His gaze was a hundred feet past the cave entrance on the far bottom before he realized that he had succeeded in his search.

He felt himself on the verge of eternity. The rim of the crater seemed sandwiched between the light-sprinkled blackness of space and the hard protrusions of the dead volcano. He raced on.

The sun was a blob of flame in a velvet sky. It seemed to quiver to his near right, as if balancing for the downward plunge. Its light cast shadows that seemed longer and more intense with each passing moment; every rill, every unevenness had its own bed of darkness.

Pendrake avoided the shadows. They were wells of cold that numbed his legs when he bounded into them. He thought finally, with utter desperation:

The suit couldn't be as bad as this, suitable only for sunlight. It must have some arrangement for heating when there wasn't any sun. It was made for space, for the Moon where darkness reigned supreme for two solid Earth weeks of every four.

Grayson and the scientists hadn't had spacesuits. It was something the Nazis must have developed—forced by their difficulty to obtain the metal necessary to construct large spaceships, they were putting atomic engines into ordinary planes and the pilots into spacesuits. Clever!

But surely to heaven they had installed some kind of power unit in a spacesuit that actually worked in space. No mean feat of invention in itself as any airman knew who had ever worn a war-time stratosphere suit with all its imperfections.

There *must* be something. He could wait till he reached the cave entrance, and then—

And then he stood using his flexible metal and plastic arm with its equally flexible fingers, searching for some kind of heat switch.

But there was only the flashlight. He turned it on. The sun was a quarter wheel with streamers, an arclike shape of light standing upright on the ground to his left.

The Moon surface itself, except for the protruding craters, was in darkness, a pit-like, mind-shaking darkness.

Pendrake shuddered, and leaped down to the first level of the cavern. The beam of light from his headpiece showed the floor was pumice dust.

The frightful cold pressed in on him as he dug. Even violent movement wasn't enough now, as it had been so long as part of the sun shone at him. The cold ate at his strength. The plate kept slipping from his numbing hand.

Like a tired old man he finally lay down in the shallow trench he had scraped in the dust. With a frantic will, he began laboriously to cover himself.

His last physical effort was an attempt to push his arm through the covering dust toward the flashlight switch in his headpiece. Mustn't use up precious power, he thought vaguely.

The curious thing was that he pushed his arm halfway up, paused for a desperately needed rest—and forgot its purpose. There was something, it seemed to him, something. He gave it up, and lay there, his body like a cake of ice, his cheeks curving plates of cold.

The conviction came that he was in his grave.

But the life force in him was tenacious and unyielding. He grew warmer. The ice went out of his bones, his flesh began to tingle, his numbed hand grew fiery with pain, and his fingers thawed.

The animal heat of him spread through the suit, a rich, luxurious force. He couldn't get as warm as he would have liked. The temperature was too low for that. After a long while it struck him that lying here was no solution to anything.

He must get deeper, deeper into the Moon's pitted interior. It *must* be warmer farther down. Friction alone, the friction of semiviscid rock and metal, product of the Moon's own tortuous writhings, would create a special higher temperature which would be held in by the insulating pumice and lava of the surface. There was, of course, the question of food, but—

Pendrake was struggling now to get out of his pumice grave; and with a snap of his will he pushed the thought of food out of his mind. Climbing to his feet, he switched on his light, and began to work his way down.

The path was a twisted one, as if once the cave might have been the tubular funnel of a live volcano—pulled out of shape by the shifting of the Moon's crust.

Down, down, slantingly down. How many times he sought warmth in a bed of dust Pendrake had no memory. Twice he slept, for how long he had no idea at all. It could have been a minute's doze; it might have been hours each time.

The cave was timeless. A world of night through which the light from his helmet poked at intervals like a thin flame. He had no mercy on himself, but plunged down, often at a dead run, after a brief flicking on of his light to reveal possible dangers.

Other caves began to branch off from the main cavern. Sometimes they were plainly nothing but branches. But when a possibility of confusion existed, Pendrake forced himself to stop, to stand there while the hideous cold ate into him—stand there and clearly mark an arrow to indicate the direction from which he had come.

He slept again, and then again. Five days, he thought; and knew that he might be fooling himself. A body so subjected to deathly cold must need more sleep than normal to recuperate. All his great strength could not ward off such a reaction of the human system.

But five sleeps—five days. Grimly he counted them in full, and added each sleep as one day—six, seven, eight nine—

Gradually, it grew warmer. For a long, long time he didn't notice that. But finally the consciousness penetrated that the intervals between those frantic burial parties of his were lengthening.

It was still bitterly cold on the tenth "day," but the chill was a slower pressure, not a biting, tearing thing. The warmth stayed longer inside him. For the first time he could walk along and clearly realize that he was a doomed man.

Other thoughts came, too. He ought to start back up again, back toward the surface where the sun would soon be shining. And once on the surface he could make a desperate two-weeks' search for one of the Nazi camps.

In a way that purpose seemed silly, stupid. For—the question became a blank wonder in his mind—what would he do if he did find such a camp? There was Eleanor, of course, but—

The very vagueness of his plans eroded his will, already long weakened from the pangs of hunger, and by a thirst so terrible that every minute seemed an hour, every second a bit of hell.

Turn around, his mind said. But his feet went on unheeding, down and down. He stumbled. He fell. And got up again. He made the narrow hairpin turn that led to the lighter corridor almost unseeing. And he was actually stepping across the entrance before the reality of it smashed at him.

With a single, mindless plunge, Pendrake dived behind a big up-jut of rock. He lay there quivering, so weak, so ill from reaction that for minutes his only thought was:

The end had come.

Recovery came hard. His nervous energy, that extraordinary reservoir of his great strength, was a worn and tattered thing.

But after a while his spirit surged once more into life. Cautiously, he peered over the needle of rock behind which his space-suit-clad body slumped. He was crazy of course to think that he had seen moving shapes in the distance, but—

The corridor stretched before his gaze on a gradual downward slant. His first intense glance showed that it was empty of life. It took a long moment after that to grasp that it wasn't lighted by electric bulbs, and that his initial impression, that light meant Nazis, was wrong.

He was alone in an old cave deep inside Earth's satellite, like a worm that had crawled along a dried-out artery of somebody's crumbling flesh.

Only no worm had ever suddenly run into a tunnel the walls of which shed a dull radiance.

The lighting was not even in texture, nor was it spaced according to any distinguishable pattern. As he walked cautiously forward, points and splashes of light shone at him. There was a long, trembly line on the right wall, and a rough crescent on the left, and other shapeless and meaningless forms glowed and blinked along the corridor as far as the eye could see.

Pendrake thought sharply: Some kind of radiant ore which might be harmful—

Harmful! His laughter echoed Homeric inside his headpiece, cut new cracks into his thirst-swollen lips, and ended abruptly as the pain grew unbearable. A man on the verge of death didn't have to worry about new dangers.

He plunged on, for a while heedless. And then slowly the presence of the light penetrated anew. The truth burst upon him suddenly as he paused at a turning and found himself staring down a long slant at a corridor of light that faded into a point of distance.

The corridor was arificial!

And old! Incredibly, fantastically old. So old the walls, that must have been as smooth as glass and harder than anything human beings had ever made, walls radiant in every element, had crumbled before the relentless pressure of ten, twenty, thirty million years. Crumbled; and this sheltered, twisted,light-splotched tunnel was the result.

He stumbled on; and the curious cunning thought came that the radiance would enable him to save his flashlight. For some obscure reason that seemed immensely important.

He began to giggle. It seemed suddenly irresistibly comic that he who was about to die had happened at this ultimate moment of his life upon an underground universe where beings had once lived.

His giggling became a wild, uncontrollable glee. Finally, however, it ended from sheer exhaustion, and he leaned weakly against the wall, staring down at the tiny river that washed across the cave, burbling out of a big crack in the rock and whirling out of sight into a hole in the opposite wall.

"I'll just cross that stream," he told himself confidentially, "and then—"

Stream!!! His mind did a somersault so terrible in the nausea it brought, so *physical* that he staggered and fell like a stunned animal. The crash of metal and plastic on rock resounded in his ears; and the shock, the clangor brought back a measure of his sanity.

He grew more alert, more conscious, came further out of his terrible stupor.

Water! The surprise of its presence struck him more sharply. The thought, the comprehension grew so big that it projected clear through his brain and down into his muscles, and was still too big.

Water! *And running!* Come to think of it there hadn't been any cold for a long time. Have to get his head free, air or no air. Somehow he'd survive if he got the water. It—

He climbed unsteadily to his feet, and saw the men coming toward him. He blinked at them, thought finally in a frowning astonishment: No armor, no headpieces! Queerly dressed, though. Funny!

Before he could think further, there was a scramble of footsteps behind him. He whirled to see a dozen men bearing down from that direction. Instantly, knives flashed. A raucous voice yelled:

"Kill the dern critter. Dirty furrin' spy!"

"Hey!" Pendrake breathed hoarsely.

His voice was lost in a chorus of bloodthirsty yells. He was shoved, flung; and he hadn't the strength even to lift his arm. At the very moment that the club struck him slantingly on the head, his amazement reached its peak; amazement because—

His assailants were not German!

IV.

A MISSING ex-airman, his kidnaped wife, a curious two-year-old story about an atomic engine—those were the threads. In all those vital days there seemed nothing else.

But there *was* another thread.

August ended. The Earth sighed as it turned on its axis; and a thousand winds blew in their thousand directions. September 1st flashed across the international date line; by the time it reached the eastern American seaboard, a northeaster was blowing; and a score of meteorologists drawing their isobars noted laconically that winter would be early this year of Grace, nineteen hundred and fifty.

By midafternoon of September 1st the hidden thread was coming up into the open. Air Commissioner Blakeley recovered from a bad case of influenza, and returned to his office. In catching up events, he came across the interview of Major Ned Hoskins, patent attorney, by one of his staff officers.

"Pendrake," he mused, then flushed with remembered humiliation. "That was the one-armed chap who threw me out of his house, then sometime afterward sent me a list of names and addresses of atomic scientists and—"

His thought stopped. A storm of blood hammered at his temples. "This could ruin me!" he thought.

After a little, very white, he sent for Pendrake's file and reread the letter with its list of names: Dr. McClintock Grayson, Cyrus Lambton—come to think of it he'd read about the death of those men in an accident and— This thing looked bigger every instant.

Sweating, he read his own reply to Pendrake's letter, "—Further correspondence would be useless—"

For a long minute he stared down at the damning document. Finally, his jaw stiffened. He reached for the telephone.

"Get me Cree Lipton of the Federal Bureau of Investigation."

The phone lights in the stocky man's private office misted, then came bright and clear. He said thickly:

"Herr Birdman speaking, excellency. What do you—"

He was cut off: "I have just received word from our Washington agents that the F.B.I. has been called into the case. Carry out Plan D at once.

"Kill Hoskins," the steely voice went on. "I place you in full responsibility. Hoskins had been in Crescentville for nearly a week tracing Pendrake's movements; he has already discovered the hole in the hillside where the engine fell that originally brought Pendrake into the affair. And he has photographed the images in the electrons in the surrounding earth with excellent confirmatory results even after all this time.

"Now that action is being taken by the government, the reason for denying him death no longer exists. That is all."

There was a click.

It was the afternoon of September 2.

Ned Hoskins glanced at the placard on the announcement board of the Crescentville All-Denominational Church — and stopped short, settled his heels hard on the dusty cement of the sidewalk. He stood there under the glare of the mid-afternoon sun, a lean, fastidiously dressed young man. With bleak-eyed hostility, he reread the words on the placard:

LETSTOP
(Let's End the Shaposhenko Type of Punishment, Inc.)
PRESENTS
A VIGOROUS SPEAKER
WHO WILL ASSAIL THIS
INCREDIBLE BLOT ON THE
CHRISTIAN WORLD
SIGN PETITION
END HATRED OF EX-ENEMY
NATIONS
THIS AFTERNOON AT 2:30
ADMISSION FREE

Hoskins' watch showed twenty minutes after two. He scowled viciously. Damn these LETSTOP people. The second meeting within ten days. Well, this time he did have his masks. But—

It had turned hot after a cool morning, a close, dry heat that made his face tingle with tiny tremors of the old pain. There was still the extra edge of needling in his right cheek where the plastic surgeons had to cut deep, long ago now.

Hoskins fingered the pain spot; and, narrow-eyed, watched the people trickling into the church. By ones and twos they came, mostly women, but there were some

men, too—oldsters, one youth and a middle-aged businessman type.

Staring at them, he felt no sympathy at all; and after a moment he shrugged with the knowledge that he couldn't shirk what had to be done here. First this, then seek out the cool environs of his hotel room.

He hurried back to his hotel, took his two masks out of his suitcase, and put them on—first the masks that had been made of his face before the surgery, and then the mask of his face as it was now.

It seemed hotter inside the church, or maybe it was just that the masks closed his pores and stifled him; and besides there was the vest he was wearing. The speaker was in full frenzied voice when Hoskins slid into a seat near the front:

"—And I say to you that *we* are the ungodly, the cruel, the merciless, *we* who have supported this atrocity against fellow human beings—"

He was a small, well-built man with a husky, rather appealing voice that yet had a penetarting resonance:

"We have won the war; we must now win the peace. The Captain Shaposhenko punishment is the vilest ever spawned by a hell-inspired, hate-inspired—"

At last the violent gestures slowed, the throaty voice sank to a skillful beseeching note:

"I have a petition form here—as soon as the question period is over. Any questions?"

Hoskins stood up. As he turned to face the audience he saw the doors of the church open slightly and the snout of a machine gun poke through.

"And they've got me cornered here in this little town," he thought.

The first burst of bullets caught him squarely on the chest.

The blows were heart-wrenching, like hammers smashing at him. Hoskins had the brief, terrible fear that he was going to faint, but with a body-twisting jerk he managed to fling himself down between the benches.

The second burst of bullets sprayed where he had been.

From somewhere near came a woman's high-pitched scream. Grasping his armor-lined bowler hat in a sweating hand, Hoskins rolled over and over beneath the benches. With frantic effort he kept tugging at the gun in the shoulder holster that was attached to his bulletproof vest.

Suddenly, the firing inside the church ceased. But there was firing now *outside*. Cautiously, Hoskins scrambled to his feet.

One lightning glance showed the machine gun was gone from the door. Instantly he raced along the aisle.

The outside shooting had stopped, too, but there was in its place the deep-throated roar of many engines. As Hoskins teetered to a halt at the top of the church steps he saw—

A half dozen black cars were drawn up blocking the road that led past the railway station. A long gray machine was swerving sharply, trying to turn; it succeeded and came careening back down toward the church—just as other black cars pulled out of a side street and bore down upon it from the opposite direction.

The gray car slowed, hesitated, and for the first time Hoskins grew aware that *its* engine was making no noise. With a hiss of indrawn breath he realized what was going to happen.

The gray sedan rose, like a thistledown it rose into the air and climbed straight up like a shooting star in reverse.

It became a dot in the sky and headed into the blue mists of immense heights. Just before it vanished, Hoskins had the curious impression that a long torpedo-shaped structure was waiting up there.

It was there; and then it wasn't. Gone, too, was the car. Hoskins shook his head, thinking hazily: It could have been a trick of his vision.

But he knew better. A torpedo-shaped spaceship was not at all out of place in the tremendous game that was being played here.

Abruptly, there was no time to think further. Shouts and cries were coming from the interior of the church behind him.

Someone was screaming: "She's dead—her face shot away!"

Hoskins felt cold and immune. He thought steadily: "I lost my soul in the war. I watched too many good men die to worry now about a LETSTOP sympathizer."

He stood staring moodily at the men who were debouching from the black cars. One of them, a knob-jawed giant, came racing up the steps.

"Hoskins!" he breathed, "you *are* Hoskins. And you're alive."

Hoskins said in a monotone: "You unimaginative fools! Why didn't you have planes overhead? Coming here like a bunch of ground hogs! If you could have shot down that auto with its engine—"

He stopped himself with an effort, shrugged grimly: "Not that planes would

have done any good," he confessed slowly. "That car was armor plated, a regular battle tank if I ever saw one."

The knob-jawed chap was rubbing his chin ruefully. "I'm afraid Hoskins, you've got the wrong slant on a peacetime United States. We came, automobiles and all, by the fastest big plane transport in the world, landed on the highway just outside of the town. But it'll be another hour at least before fighter planes are tuned up and ready for flight."

The man's deep voice quickened. "The important thing is, we didn't wait for them, and you're alive. Man, quick, tell me, what do you know? Why did they want to silence you? Here's my identification: Cree Lipton. F.B.I. Now tell me."

Hoskins stared at him wryly, he said finally: "I know that there's a superengine in existence."

"Yes, yes"—Lipton frowned at him—"we know that, too, now. But what else? What did Pendrake tell you?"

Hoskins drew a deep breath. "I know nothing else," he said.

"Eh!" Then slowly the shock faded from the F.B.I. agent's face. "I see. We actually know more than you do. We've discovered that seventeen leading atomic scientists and their families have been murdered or are missing. It all happened about eight months ago, and the crimes were so thinly spread out over the country that only a few scientific journals commented on the deaths. In addition we've had this experience in every raid we've made—"

He took an envelope from his pocket, drew out a newspaper clipping and handed it to Hoskins, who read:

FIRE GUTS FIFTIETH STREET TOWERS

Sept. 2nd—The strange turreted towers, formerly occupied by the Cyrus Lambton Back-to-the-Land Project, more recently by the head offices of the trucking firm of Fred Birdman, was completely destroyed at noon today by a fire of undetermined origin. The twin towers, which were located at—

"Birdman has vanished utterly," Lipton said. "The question therefore is, what now?"

Hoskins scarcely heard. He stood staring sardonically at the sign which had announced the LETSTOP meeting.

In the scramble it had somehow been knocked loose, and lay now face down in the dirt.

Where it belonged, he thought grimly.

The stocky man sighed with relief. Just what he had expected he couldn't define exactly, but certainly not this—not this philosophical attitude on the part of the leader. Even the smoldering eyes seemed calmer, less feverish.

"It is the fortune of war, Herr Birdman," the tall man shrugged. "The enemy acted with admirable speed and decision, and he now knows that some American scientists invented an atomic engine, and operated spaceships from the very centers of their cities. He knows, too, that the co-called defeated Nazis now have the engine and are putting it to nefarious uses. There is a psychological value to us of such knowledge. It will revive the bolder spirits among our good German people to new hope. The young men will grow up expecting, waiting to be called. Meanwhile, safe in space, we shall develop until we are ready to strike."

He frowned thoughtfully at the floor. "There are certain precautions we must take here on Earth, beginning with the removal of doubtful elements. Particularly, we must be prepared for new restrictions in the Reich itself. I shall appoint a co-ordinating committee.

"As for the situation on the Moon, one of the engineers in Factory L, Herr Steulpnagle, to be exact—"

"A good worker for the Cause," Birdman nodded.

"Precisely," said the other coldly. "He has now requested permission to marry Mrs. Pendrake, and as you are leaving today for the Moon, I want you to instruct Mrs. Pendrake to prepare for marriage in a month's time.

"As for Pendrake himself, we must not assume that he is dead. His trail from the shattered plane wing led to a cave in the crater. A cursory investigation showed that he was still alive at a depth of one mile, but that he was burying himself at intervals, and therefore had only discovered the auxiliary heating mechanism attached to the flashlight and not the main switch.

"To make sure of him, I think we must now be prepared to organize a military campaign against the cave dwellers; we have tolerated their depredations long enough—"

V.

PENDRAKE wakened to the sound of a melodious humming. It was somewhere off to his left, but for a moment the delicious weakness of his every nerve and muscle, the odd physical pleasure of just lying on something

soft and comfortable, drained the inclination in him to turn his head and look at the man whose tuneful warbling had aroused him.

After a moment, it struck Pendrake with a sharper consciousness that he was alive; and that that didn't fit with what had gone before.

But still he lay there. And after a little he found himself frowning in amazement at a lighted cave roof that must have been a mile high. He closed his eyes, shook himself, then opened his eyes again. But that tremendous roof remained. What had been a narrow snake of a cave had somehow opened out, and here was an underground vastness.

The sight quickened his whole being. He grew aware of a thin breeze that touched his cheeks and brought a sweet scent of growing things, an odor of garden and trees in bloom.

Pendrake stirred in a gathering excitement. The movement brought his first awareness that he was no longer arrayed in the spacesuit.

The movement did something else. It ended the humming. Footsteps sounded. A young man's voice said:

"Oh, you're awake."

The speaker came into view. He was a slight-built young man with a thin face and bright eyes. He wore a curiously old-fashioned, threadbare coat, and his legs were incased in trousers that were strapped under his shoes. He said:

"You've been unconscious for four sleep periods. I've been squeezing water and fruit juices between your lips every little while. You must have been lost in the upper caves at least a month. My name's Morrison, by the way."

"Lost only ten days!" Pendrake said; and then he blinked, for no words had come, nothing but a hoarse rasping sound.

"Better not try to speak yet," the young man counseled. "You're still in a bad way. As soon as you're strong enough you're to be taken to Big Oaf for questioning—that's why you've been kept alive!"

The words didn't penetrate right away. Pendrake lay very still, thinking: He was insane to imagine that, because he had slept ten times, only ten days had passed. The cold, his terrible will to live, must have kept him going for days at a stretch.

Ridiculous to think that he had reached such a disastrous physical state in ten days when thousands of less strong men in the war had survived longer exposure in open boats, in trackless jungles, and on foodless plains and steppes. This fellow, Big Oaf—

Big *what?*

He muttered his amazement, and this time managed a husky whisper. The young man grinned at him:

"That's his name all right. Somebody called him that once, and he took a fancy to it; and nobody's ever dared to tell him the meaning. He's Neanderthal, you know. Been here a million years, at least, almost as long as the devil-beast in the pit."

A startled look came over the young man's face. "Oh!" he said in alarm, "I wasn't supposed to tell you that."

His panic grew. Gasping, he came down beside Pendrake, clawed at his arm.

"For Heaven's sake," he whispered hoarsely, "don't tell anybody that I told you how old we are down here. I've done my best for you. I've brought you back to life; I fed you. I was supposed to keep you locked up—I'm your guard, you know, and you're in jail—but I brought you out here and—"

He broke off: "Please, don't tell!"

His face was a twisted mask of fear—that changed. Changed to cunning, then to ferocity. Abruptly he jerked at the knife that Pendrake saw for the first time was in a sheath under his coat.

"If you don't promise," he threatened wildly. "I'll have to pretend that you tried to escape, and that I had to kill you!"

Pendrake found his voice. "Of course I promise," he whispered hoarsely.

He saw instantly in the distorted eyes above him that no simple promise could soothe the terrified creature who crouched over him. Danger made his whisper louder, stronger, as he said swiftly:

"Don't you see, if I know something they don't want me to know, they'll kill me out of hand. It's to my own interest to keep information to myself. You see that, don't you?"

Slowly, the fear died out of the young man's eyes. He climbed shakily to his feet, then he began to whistle softly. Finally he said:

"They're going to toss you to the devil-beast anyway, they take no chances except with the women. But keep my name out of it, that's all, and anything I've said."

"Agreed!"

Pendrake whispered the word, and mustered the form of a smile, but he was thinking grimly: Sleep lightly. Watch out for a knife—in my sleep.

He must have slept while that thought was still forming in his mind.

His first, intense thought when he wakened the second time was: A man named Morrison—in the center of the Moon.

He had the abrupt conviction: Got to find out more about the whole business. Those men came from Earth, and have been here a long time.

There was a sound beside him. A thin, familiar face bent over him.

"Uh!" said Morrison, "you're awake again. I've been waiting, listening to you talking in your sleep. You talked a lot. I'm supposed to report everything you say."

Pendrake started to nod half to himself, his mind merely taking in the words; and then the greater meaning of them, the mental picture of someone—out there—someone named Big Oaf giving orders, cunningly receiving the reports of spies, granting temporary stays of execution—abruptly he felt outraged.

He sat up. "Look here," he began, "who the devil—"

His voice was clear and strong, but it wasn't that returned strength that stopped him short.

Below him was a town set in a garden of trees and flowers. There were broad streets, and he could see men and—queer! —uniformed women.

He forgot the people of the town. His gaze soared from horizon to horizon. There was a green meadow on the far side of the town where cattle grazed. Beyond, the ceiling of the cave swept down to a junction with the ground at some point below the cliff, a point invisible from where he sat.

It held him for a moment, that line where a radiant cave sky met a cave horizon.

Then his gaze came back to the town, to the gorgeous town. A hundred yards away it began. First there was a line of tall trees heavily laden with large, gray fruit. The trees sheltered the nearest of many buildings. The structure was small, delicate-looking. It seemed to have been built of some shell-like substance.

It glowed as if light was inside it, shining through its translucent walls. Its design was more that of a shapely bee's nest than of a sea shell, but the resemblance to the shell was there, too.

The other buildings that glinted tantalizingly through the trees differed widely in details, but the central architectural motif, and the basic glow-material was ever present.

"The town's been like that," Morrison's voice said, "since I came in 1853, and Big Oaf says it was like that when he—"

Pendrake turned. The mention of dates was staggering, but he caught at the wedge they offered. "And he's been around a million years, you said."

The thin face twisted uneasily. The man looked hastily around. His hand crept toward his knife. Then he caught Pendrake's eye, and he let go of the hilt. He was trembling.

"Don't repeat that," he whispered desperately. "I was mad to tell you, but it just came out, that's all. It just came out."

There was no mistaking the fear. It was real, and it made everything else real, the million years, Big Oaf, the eternal town below. For a long second Pendrake stared at the way the weakling's face was working, then he said:

"I won't say a word, but I do want to know what it's all about. How did you get here onto the Moon?"

Morrison shifted. A bead of sweat ran down his cheeks; Pendrake felt a stark incredulity that any man could be so frightened.

"I can't tell you," Morrison said in a panicky voice. "They'll throw me to the beast, too. Big Oaf's been saying that there's too many of us here ever since we abducted those German girls."

"German girls!" Pendrake ejaculated; and stopped himself short, his eyes narrowed to pin points. That accounted for the women in uniform he had seen in the streets. But what a hornets' nest these cave dwellers were stirring up for themselves— Morrison was continuing in his sharp tone:

"Big Oaf and his cronies are mad for women. Big Oaf's got five wives now, not counting the two that killed themselves and he sent another kidnaping expedition out. When they get back—well—he's just waiting for a chance to kill off all the decent men."

The picture was clearer now; the missing details fundamentally unimportant. Pendrake sat grim and cold, *seeing* the cataclysm that had brought hell to the Moon's garden of Eden. The stupid fools, Morrison and the others, he thought furiously, waiting like a bunch of frightened sheep for the slaughter, even humming happily during mindless moments.

He parted his lips to speak—and was cut off by a bull voice behind him, roaring:

"What's this, Morrison? The prisoner strong enough to sit up, and you haven't

reported it. Get going, stranger. I'm taking you to Big Oaf."

For a moment Pendrake sat as still as death. The needle-sharp thought that came finally was: He was too sick, too weak. The crisis had come too soon, far, far too soon.

Thoughtful, alert, Pendrake walked along the street of the village. That he could walk at all was exhilarating. He couldn't dare try anything involving strength yet, but he simply must survive a few "days" longer —gain time to observe, correlate, organize the demoralized anti-Big Oafs.

His Air Force and science training stood him in good stead. He wasted scarcely a glance at the houses and the motley assortment of raggedly dressed men and the sullen women in their Nazi woman's corps uniforms barely touched the outer fringes of his thought. His mind, his whole being concentrated on control centers.

With abrupt understanding of the gestapolike regulation of vital supplies that was here, he noted that two half-naked men with blue skins and broad flat noses stood guard over a stream of water that gushed from a wall and gurgled out of sight through a hole in the ground. There were other places being guarded, particularly four large buildings, but the reasons for protecting them were not apparent at first glance.

Pendrake moved forward a few yards, then stopped. And stared. In almost the exact center of the town, half hidden by a growth of trees, was a stockade.

It was made of tree boles, lashed together. Tall it stood, presenting a hundred-and-fifty-foot front, fifty feet high, with a massive gate around which loitered a dozen men with spears, long bows and drawn knives. The structure looked obscene, ugly, utterly incongruous among the delicate hued, shell-like houses. But there was no doubt at all that here in this monstrous fort dwelt the central authority of his fantastic world.

The thought ended as one of the guards, a raggedly dressed individual who wore spurs on high boots and looked like a bad caricature of a cowboy, challenged:

"Takin' this feller in to see Big Oaf, Troger?"

"Yep!" Pendrake's bearded, bull-voiced escort answered. "You better search him, though."

"What about Morrison? Does he go in, too?" asked a black-eyed man in a shiny tattered remnant of what must once have been a black suit of some kind. It struck Pendrake with a start, as fingers poked eagerly through his pockets that this second guard resembled with startling fidelity a motion picture version he had seen of a gambler of the old West.

Pendrake felt a sudden, sharp fascination. In spite of himself, in spite of his will to waste not one glance on anything that might confuse, he grew more aware of the men.

They had been blurs to his vision; now they came into sharp focus: Men of all the periods of the West, an astounding assortment, even some that didn't seem to fit at all. But Pendrake felt not a shadow of doubt:

They were all Western American. It was as if in some incredible fashion a net had been cast from the Moon, and into that net had fallen men from every age of the western United States: and then the catch had been gathered here and, like this immortal village, kept immune from the ravages of time.

There were about a hundred men visible from where he stood at the gate of the stockade. Seven of them were Indians in loin cloths, red of skin, tall, arrow-backed. *They* fitted. And so did all the roughly dressed men in open-necked shirts and belted, narrow-legged trousers; and so did the ragged cowboys.

Morrison didn't fit, not quite, though there must have been clerk-ish types like him in Western towns. There were some short, ugly men and some very fine big, dark-brown men who didn't fit either; and there was another one of the half-naked, blue-skinned, flat-nosed men, but—

Whoever had collected this crew had gotten hold of some of the toughest characters that the old, hard West had ever bred.

A big hand grabbed his collar, pushed him physically and mentally out of his mood of appraisal.

"Get in there!" said the voice of Troger.

Pendrake's reaction was automatic. If he had thought, if he hadn't had to come so far out of his dark speculations, he would have controlled himself in time.

But the insult of being grabbed came too suddenly. His response was as violent as it was involuntary. His arm came up; his fingers caught the offending wrist; and for one brief instant every tired nerve in his body pumped power with the lightning speed that alone makes for tiger strength.

There was a roar of pain, and a hard thud, as Troger described a cartwheel in the air and landed twenty feet away. The man bounced up instantly, raging:

"I'll beat your brains out. No one-armed guy can—"

He stopped; his gaze fastened on somebody behind Pendrake, and his whole body grew rigid. Pendrake, trembling from the nauseation produced by his effort and stunned at his utter stupidity in revealing how strong he could be, turned dizzily.

A creature stood in the gate; and one glance was enough to identify it: Here was Big Oaf, Neanderthal monstrosity.

He was a man; he had a roughly human shape, a head with eyes, nose and mouth. But at that point the physical resemblance to anything human ended.

His figure was five foot four in height, and about three feet wide in the chest. His arms hung below his knees. His face was—beast; the teeth far too long, and projecting from between enormously thick lips.

He stood there like some nightmare out of hell, naked and hairy except for a black fur that hung from a strap around his belly. He stood slouching, and it took a long moment for Pendrake to grasp that the creature's piglike eyes were studying him shrewdly. Even as realization came, the thing parted those tremendous lips and said in throaty but unmistakable English:

"Bring the feller inside! I'll talk to him from my throne. Let about fifty people in."

The inside of the stockade was ordinary. There was a big, glowing, shell-like house, a little river of gurgling water, fruit trees, a vegetable garden, and a wooden dais on which stood a huge wooden chair.

The wooden chair was the throne, and it was obvious to the grim Pendrake that whoever had given Big Oaf the idea of kingship hadn't had too clear an idea of regal splendor.

But Big Oaf seated himself with assurance and said:

"What's your handle?"

It was no time for resistance. Pendrake gave his name quietly.

Big Oaf whirled in his chair, pointed with a thick hairy finger at a tall, gray-eyed man in a faded black suit.

"What kind of a handle is that, MacIntosh?"

The tall man shrugged. "English."

"Oh!" The pig eyes turned back to Pendrake, stared speculatively. The beast said: "Better talk fast, stranger."

It was the Western twang of speech that made it almost impossible for Pendrake to grasp that he was on trial. A psychological hurdle it was that he had to force his mind over. But finally, with gathering consciousness that he was talking for his life, Pendrake began his explanation. He finished with a rush, twisting on his heel and facing straight toward the thin-faced young man who had been his jailer, saying in a ringing voice:

"And Morrison, here, will bear out every word. He says I talked in my delirium about what I'd been through. Isn't that right, Morrison?"

Pendrake stared at the young man's face and felt a brief, icy sardonicism at the petrified expression that was there. Morrison's eyes grew wide, and then Morrison was gulping:

"Yup, that's right, Big Oaf. You 'member you told me to listen, and that's what he said. He—"

"Shurrup!" said Big Oaf; and Morrison collapsed into silence like a pricked balloon.

To Pendrake came a brief compassion for the frightened young man, but there was no regret at all that he had put pressure on the little coward. He saw that the monster was studying him intently; and there was something in the expression—Pendrake forgot Morrison as Big Oaf said in a strangely gentle voice:

"Hit him a little guys; I like to see how a feller takes punishment."

After a minute he said: "All right, that'll do."

Pendrake climbed groggily to his feet; and it wasn't all acting. In the excitement of the—trial—he had forgotten that he was a sick man. He stood shakily, and heard the beast man say:

"Well, fellers, what'll we do with him?"

"Kill him!" It was a raucous cry from several throats. "Throw him to the devil-beast. We ain't had a show for a long time."

"That ain't no reason to kill anybody," said a thick-faced man in the back of the crowd. "If these fellers had their way, they'd have a show every week, and we'd all be dead soon."

"Yah, Chris Devlin," a man snarled, "and that's just where you'll be one of these days."

"Just start something!" Devlin snapped back. "We're waitin' for ya."

"That'll do!" It was Big Oaf. "The stranger lives. You can stay with Morrison for a while. And listen, Pendrake, I wanna

talk to you after you've had another sleep. Hear that, you guys, let him in when he comes. Now, beat it, all of you."

Pendrake was outside the stockade almost before he realized that he had been granted life.

VI.

PENDRAKE ate and slept, then ate and slept again. He awakened from his third sleep with the thought wedged tight in his mind that he dared not delay any longer his visit to Big Oaf.

But he lay for a few minutes. It was not that his bedroom was particularly comfortable. The sparkling light from the walls was too sustained for human eyes that needed darkness. The bed, while soft, was concave. So were the two long backless chairs. The door that led to the adjoining room was two feet high, like an igloo entrance.

There was a scraping sound, a head poked through the doorway, and a stocky man crawled through and stood up. It took a moment for Pendrake to recognize Chris Devlin, the fellow who had objected to his being killed.

Devlin said: "I'm being watched. So my coming here puts you under suspicion."

"Good!" said Pendrake.

"Eh!" The man stared at him; and Pendrake returned his gaze coolly. Devlin went on slowly: "You've been thinking things over, I see!"

"Plenty," said Pendrake.

Devlin seated himself in one of the concave chairs. "Say-y-y," he said, "you're a man after my own heart. I'd like to ask you a question: The way you handled Troger —was that an accident?"

"I could do that," said Pendrake flatly, "to Big Oaf."

He saw that Devlin was impressed and smiled wryly at the effectiveness of the psychology he had used—the psychology of deliberate positivity.

"It's too bad," said Devlin, "that a man with your spirit has only got one arm."

Pendrake winced. The problem of his one arm was not one which he had omitted in his calculations. He said quickly:

"Forget my lost arm. It's no handicap. The important thing is, how many men can you count on?"

"About a hundred. Two hundred more would shift over if they dared, but they'll wait till the tide has turned. That leaves two hundred solidly against us, and they can probably dragoon another hundred into fighting for them."

"A hundred is enough," said Pendrake. "The world is run by small groups of men. Two hundred thousand determined men overthrew the Czarist regime in a Russia of a hundred and fifty million people. Hitler took control of Germany with a comparatively small body of active followers. But here's some advice, Devlin."

"Yes."

"Take the water source. Take the places that are guarded, and hold them at all costs. Kill every one of the two hundred who are solidly for Big Oaf, even if they beg for mercy. On Earth we have the Shaposhenko punishment for their kind with its careful gradations, but that's impossible here." Pendrake paused, then: "How many wives have you got, Devlin?"

The man started, changed color. He said at last, violently: "We'd better leave the women out of this, Pendrake. Our men have been so long without women that—we'd lose all our followers."

"How many wives?" said Pendrake steadily.

Devlin stared at him. He was pale now, his voice harsher. "Big Oaf's been clever," he admitted. "When we captured those German women he gave every one of his hundred most determined enemies two wives."

"Tell your men," said Pendrake, "to choose the one they prefer, and leave the other alone. Do you understand?"

Devlin was on his feet. "Pendrake," he said in a thick voice, "I'm warning you, leave this subject be. It's dynamite."

"You fool!" Pendrake snapped at him. "Don't you see that you've got to start right? The human mind is a deadly instrument that gets into certain habits. If the habits are wrong—and the very idea of two wives makes chattel out of women and its therefore utterly wrong—I repeat, if the habits are wrong you can't just start refashioning the mind. You've got to break *that* matrix by death and begin with a fresh one."

He broke off: "Besides, you people haven't any choice. You're all slated to be killed, and those wives are designed to keep you quiet until the right opportunity occurs. You know that, don't you?"

Devlin nodded reluctantly. "I guess you're right."

"You bet I'm right," said Pendrake coldly. "And I might as well make my position

clear: Either this game is played my way, or it's played without me"—he stood up with a swift, gliding movement, his voice grim as he finished—"and I pity those who tackle Big Oaf without this arm of mine to hold him off. Well, what do you say?"

Devlin was standing frowning at the floor. At last he looked up, a wan smile on his face.

"You win, Pendrake. I don't promise results, but I'll do my derndest. Our boys are good fellers at heart—and at least they'll know they're dealing with a right guy. But now you'd better be on your way to Big Oaf. Yell loud if he starts anything."

"Any idea," asked Pendrake, "what he wants me for?"

"Nary a one," was the reply; and Pendrake was halfway to the stockade before it occurred to him that he still didn't know how these old West men had gotten to the Moon, and that he had forgotten to ask Devlin if the cave dwellers had had the wit to make plans to protect themselves from German retaliation for their depredations.

So quickly had he become absorbed by the immediate danger, and forgetful of the greater, more remote one.

Big Oaf crawled out of the door of his house, and stood up.

"You took your time," he growled.

"I'm a sick man," Pendrake explained, "and this Moon gravity makes it possible to walk where you'd be flat on your back on Earth. That beating your men handed me didn't help any, either."

The monster's answer was a grunt, and Pendrake stared at him cautiously. They were alone inside the stockade; and the effect was of isolation from the universe, a curious, empty feeling of being cut off in an unnatural world.

He saw with a start that the creature's piglike eyes were studying him. Big Oaf broke the silence:

"I been here a long time, Pendrake, a long time. I was kinda dumb when I first came—like these other guys are; but my brain somehow grew up over the years, and now I got the sense to worry about things they never even think about, like those Germans f'r instance."

He paused, and looked at Pendrake. Pendrake hesitated, said finally:

"You'd better worry about them, and worry hard."

Big Oaf waved an apelike arm, and shrugged his massive shoulders. "I merely mentioned that as a f'r instance. I got my plans laid for those fellers. What I mean is, when you look at me, think of somebody who's got a brain with sense in it like your own, and never mind the body. How about it, uh?"

Pendrake blinked. The appeal was so unexpected, so remarkable in the picture it brought of a sensitive mind aware of its beastlike body, that he was touched in spite of himself. Then he remembered the five wives, and the two other women who had killed themselves. He said slowly:

"What other worries have you got, Big Oaf?"

It seemed to him, as he spoke the noncommittal words that the barest hint of disappointment flickered over the hairy face. Then Big Oaf said:

"I was walkin' along a trail on Earth, 'n' all of a sudden I was here."

"What's that!" Pendrake gasped.

Incredulous, his mind hurtled back over the ape man's words, and again the shock came. It took him a long moment to grasp coherently that he had been told the secret of how these people had arrived on the Moon. Big Oaf was continuing:

"It was the same with the others. 'N' from the way they describe it, they were coming down the same trail—that scares me, Pendrake."

Pendrake frowned. "What do you mean?"

"There's something down there on Earth, nothing you can see, but at this end you come out of a machine. Pendrake, we gotta shut that machine off somehow. We can't live here, not knowing who or what's gonna barge along that trail and through the machine."

"I see what you mean," said Pendrake slowly.

It was the calmness of his own words that shocked him this time. For he was quivering in every nerve, his whole body cold, then hot, then cold again. A machine—

A machine that transported objects unharmed—focused on a trail in the western United States, a machine through which an army could come and attack the Nazi strongholds on the Moon, capture an engine, everything—

With a start, Pendrake saw that the Neanderthal was glaring at him. The man had been sitting against the edge of the wooden platform on which the throne chair stood; now he leaned forward; the great muscles of his chest stood out like anchor ropes.

"Stranger," he said, and he almost hissed the words, "get this straight, this place is fenced-in territory. There ain't never a lot of people gonna come down here. The world'd go mad if it was ever found out that there was a town in the Moon where it's possible to live forever. Now, do you see why we've got to shut off that machine, and cut ourselves off from the outside? We got somethin' down here that people'd commit murder to have.

"Wait"—his voice beat at Pendrake—"I'm gonna show you what happens to guys who get any other kind of idea. Come along."

Pendrake came. Big Oaf ran along the street straight into the open country, and Pendrake, bounding along behind, saw after a moment where he was heading: the cliff.

Bif Oaf reached it first. He pointed down. "Look!" he cried hoarsely.

Pendrake approached the edge of the abyss cautiously, and peered over. He found himself staring down a wall of cliff that descended smooth and straight for a distance of about five hundred feet. There was brush at the bottom and a grassy plain and—

Pendrake gasped. Then he felt faint. He swayed dizzily—and then with a terrible effort caught his whirling mind. And looked again, trembling.

The yellow-green-blue-red beast in the pit was sitting on its haunches. It looked as big as a horse. Its head was tilted, its baleful eyes glaring up at the two men. And the hideously long teeth that protruded from its jowls confirmed Pendrake's first mind-shaking comprehension:

The devil-beast was a sabre-toothed tiger.

Slowly, his breathing returned to normal, his pounding heart slowed. The great wonder came:

How many æons that machine must have been focussed on that trail there on Earth, to have caught such a prehistoric monster. And how tremendously long ago the people who had built the machine and the village must have died.

The thought passed. With narrowed eyes he stared at Big Oaf. The creature-man was kneeling at the abyss edge a dozen feet away, watching him intently. Pendrake said softly:

"It must have been fed. It must have been kept alive on purpose."

Blue-gray eyes that were slatehard, met his own. "At first," said Big Oaf, "I kept it alive for company. I used to sit on the cliff and shout at it. Then when the blue men came with a bunch of buffalo, I got the idea that maybe it would come in handy. It knows me now."

He finished darkly: "There's plenty of men inside it, and there'll be more. Better not be one of 'em, Pendrake."

Pendrake said steadily, slowly: "I'm beginning to see the light. All this attention you're lavishing on me—you said something about shutting off the machine—and I'm the only man who ever came here who knows anything about machinery. Am I getting warm, Big Oaf?"

Big Oaf climbed to his feet; and Pendrake did the same. They backed away from the cliff's edge step by step, staring at each other. It was Big Oaf who said finally:

"Pendrake, I'm gonna offer you half of everything. You and me'll be the bosses here, with first choice of the women and all the good things. You know we can't let the world in on this place. It just ain't possible. We'll live here forever, and maybe if you ever get all the machines on this place workin', we can step out and get what we want from anywhere."

"Heil Hitler," said Pendrake sardonically. "Big Oaf, have you ever heard of an election?"

"Uh!" The pig eyes stared at him suspiciously. "What's that?"

Pendrake explained; and the hairy beast gaped at him incredulously.

"You mean," he exploded, "if those lame brains don't like the way I run things they could kick me out?"

"That's it," said Pendrake. "And it's the only way I'll play ball."

"To hell with that," was the snarling response. And on the way back to the town Big Oaf said in an ugly tone: "Somebody told me you've been talkin' to Devlin, Pendrake. You—"

He broke off. The anger died from him as if he had cut it out with a surgical knife, cleanly. As Pendrake watched the transformation in narrow-eyed astonishment, a grin spread over the apish face:

"Just lissen to me gettin' mad," Big Oaf said, "a feller that's lived a million years and is gonna live another million if he plays his cards straight."

Pendrake was silent, conscious of the man eyeing him. He was staring, too, thoughtful. In every way Big Oaf was showing himself to be an immensely dangerous "feller."

"I got all the aces, Pendrake," Big Oaf's voice projected softly across his brief reverie, "and a royal flush up my sleeve. I can't get killed 'less a rock falls down from the roof—" He glanced up toward the height above, then looked at Pendrake, his grin broader. "It happened onct to a guy."

They had stopped. They stood in a little valley under a spread of trees. The town was beyond the rim of the hill. But for the moment there was not a sound of raucous laughter, not a whisper of voices. They were alone in a queer universe, man and semi-man facing each other. Pendrake broke the thrall:

"I'm not going to count on it happening to you."

Big Oaf guffawed. "Now you're smart. I thought you'd catch on quick. Lissen, Pendrake, you can't buck me, so think over what I've told you. Meantime, I want your promise you won't mix up with anybody. Is that fair?"

"Absolutely," said Pendrake.

He felt no compunction about the swift promise. It was clear that he had gone to the very edge of the abyss in his opposition; and he wasn't ready. If there was one thing the years of fighting had taught every sane human being on Earth, it was that death came easily to those who fought fair against those who didn't. Big Oaf was continuing:

"Maybe we could even work together on a couple of things, like those Germans. Maybe I'd even let you look that machine over after the next sleep. Say-y-y—"

"Yes?" Pendrake stared at him warily.

"Didn't you tell me your wife was a prisoner of the Germans. How'd you like to spend a coupla weeks leadin' an expedition to see if you could rescue her?"

Pendrake's brain thrummed. It became a pain that extended down into his body, and then he saw that the other's small, shrewd eyes were contemplating him sharply.

Excitement puffed out of him. Eleanor had to be rescued *fast*—but he couldn't see himself bringing her down here until he had consolidated his position with Devlin and the others. Couldn't see himself at all on an expedition of which the large purpose would be mass woman stealing.

Compromise plus his own desperate necessity was going to make for complication.

VII.

"It's time to get up!"

Morrison came into the bedroom the next morning with the announcement.

"Time?" Pendrake stared at the slim young fellow. "Isn't all time down here the same. Why shouldn't I just stay here until I get hungry?"

To his surprise, Morrison shook his head doggedly. "You've been sick, but that's over. Now, you've got to fit into the routine. Big Oaf says so."

Pendrake studied the other's lean face. The thought that was in his mind had to do with Morrison as a spy on his activities. It hadn't really struck him before how much of a Big Oaf follower the clerk-ish little fellow was.

His plan to spend the next few days in an intensive sizing up of everything and everybody in this strange land might as well begin here and now. Not that Morrison was dangerous as an individual. The man would always be a supporter of the regime that was *in*.

"Big Oaf," said Morrison, "has got everything organized. Twelve hours for sleep, four hours for eating and so on—you don't have to eat or sleep of course. You can do anything you want so long as you're ready to do your eight hours a day work."

"Work?"

Morrison explained: "There's guard duty; the cows have to be milked twice a day. Then there's the gardens to look after, and we kill several steers a week. It's all work."

He pointed with a sweep of his arm, vaguely. "The gardens are over there beyond some trees, in the opposite direction from the pit where the beast is."

He finished: "Big Oaf wants to know what you can do."

Pendrake smiled wryly. So the apeman was letting him know what life would be like if he was not one of the bosses.

It wasn't the work but the sudden vivid picture of the tight system of a law-and-order hierarchy behind it, that was unsettling. Pendrake frowned, said finally:

"Tell Big Oaf that I can milk cows, work in gardens, do guard duty and a couple of other things."

But there were no work orders for him that day. Or the next. He wandered around the town. Some of the men rebuffed his approaches, others were so uneasy that talking to them was a hopeless chore, still others including men who were staunch supporters of the Big Oaf were curious about Earth. Some of these had the idea that he was going to be one of them.

In the course of the conversations, Pendrake learned the case histories of miners, gamblers, cowboys. His composite picture grew clearer. The main group of them belonged to a period between 1825 and 1875. He placed the trail where the transport machine was focused to be within twenty miles of an old frontier settlement called Canyon Town.

On the third morning Devlin crawled into Pendrake's bedroom just as he was getting up.

"I noticed Morrison going to the stockade," the man said, "so I sneaked over. We're ready, Pendrake."

Pendrake jumped a little, and then settled down onto the bed. He sat there grimly wondering what these men with their complete inexperience of a really planned war considered adequate readiness. He listened, trying to picture everything in scenes, as Devlin began:

"The central idea is to take the stockade and force surrender. The men don't fancy a lot of bloodshed. The details are—"

Pendrake listened to the childish thing, conscious of a great weariness. All his advice had been ignored. The ruthless surprise attack that alone would make for a quick victory, bloodless for the attacker, shelved for a vague scheme to get the enemy cornered in the stockade and—

"Listen, Devlin," he said finally, "look at me. For two days I've been doing nothing. You'd think I didn't have a care in the world. Yet my wife's in the hands of the damnedest, most murderous bunch of gangsters that ever lived on Earth. My country is in a danger that it doesn't even know about.

"Furthermore, three days ago, Big Oaf asked me if I'd like to lead an attack against the Germans on the chance that they have my wife here on the Moon. It's obvious also that such an attack might enable us to capture an atomic engine.

"Why am I not rushing forward when I'm nearly crazy with anxiety? Because defeat is ten times as easy as victory and more final. Because all the will in the world isn't enough if the strategy is bungled. As for bloodshed—you don't seem to realize you're dealing with a man who won't hesitate a second to order a general massacre if his position is ever threatened.

"You don't seem to realize how skillfully this place is organised. The outward appearance is deceptive. Unless you work fast, you'll have all the doubtful men against you, and they'll fight twice as hard to prove to Big Oaf that they were with him all the time.

"Now, let's organize for battle, not a game. Tell me, what's in those guarded buildings?"

"Guns in one of them, spears and bows and arrows in another, tools in a third—everything that ever came through from Earth Big Oaf took possession of."

"Where's the ammunition for the guns?"

"Only Big Oaf knows— Say, I'm beginning to see what you mean. If he ever gets those guns going—we've got to capture them."

"If," said Pendrake, "the first arrow fired by every man could kill or disable one of them, our little war would be over in ten minutes, but—"

There was a scrambling sound at the doorway. Morrison crawled through. He was breathing hard, as if he had been running.

"Big Oaf," he gasped, "wants to show you the transport machine. Shall I tell him you're coming?"

The transport machine stood inside a high, timber stockade five feet from the edge of the cliff. It was made of a dark, almost a drab metal, and its base was a solid gray rock.

Pausing on the wooden platform that ran around the upper edge of the stockade, Pendrake frowned down at the unbeautiful structure. In spite of all his will, he was excited, because if he could get this marvelous instrument to work, if he could focus it *anywhere,* say into the German prison where Eleanor was, or into American military headquarters or—

Or simply learn how to reverse it!

Shakily, he forced the hope out of his mind. Thirty feet long, he estimated, twelve high and eighteen wide. Big enough for almost anything except a locomotive.

He walked along the platform, and paused finally where it twisted around the edge that overlooked the abyss. The distance that stretched below shocked him. His body did not succumb easily to dizziness, but it wasn't necessary to take the risk merely to get a down look at the mouth of the machine.

He drew back. He faced Big Oaf who had been sitting watching him with expressionless eyes.

"How do you get into the stockade?" Pendrake asked.

"There's a door at the other side."

There was. Padlocked. Big Oaf fumbled down into the fur that was strapped around his great belly, and produced a key. As the creature swung open the heavy door, Pendrake extended his hand.

"How about letting me have the lock? I don't think I could climb up those walls if I happened to get left inside."

He spoke deliberately. He had done a lot of thinking of what his face-to-face policy to Big Oaf should be; and it seemed even now in the speaking that open distrust expressed without rancor was psychologically correct.

Big Oaf grimaced. "That place ain't fer you. I built it strong and high like that so nobody nor nuthin' could come through from Earth and catch me by surprise."

Nevertheless," Pendrake insisted, "I wouldn't be able to concentrate properly if I had even the feeling that maybe—"

Big Oaf grunted. "Look," he said, "maybe you'd like to lock me in."

Pendrake pointed. "See that hill over there, about a hundred yards?"

"Yaah?"

"Throw it over there?"

Big Oaf stared at him surlily, then he cursed. "Like hell! Suppose you get somebody over there to pick her up, and lock us both in Then they put an arrow in me, and let you out."

In spite of his tenseness, Pendrake smiled. "You're one ahead of me," he confessed.

He frowned finally. It wasn't that he had any real fear of Big Oaf at this stage. The man didn't have to use trickery, not yet. And it might be a good idea, now that his protest had been made, to let the beast win. Not too fast, though.

"Ever leave anybody in there?" he asked.

The squat man hesitated. "Yaah," he said. "Two funny-lookin' guys all dressed up in metal. They had a damn queer gun, all kinds of fine wires on it, and the whole thing shining with a blue light.

"I used to have a scar on my shoulder where they burned me with it. I was scared stiff they'd burn down the stockade, but I guess it didn't work on wood."

He sighed hoarsely with regret. "I'd sure like to have had that gun. But they took it with 'em when they jumped over the cliff."

Big Oaf explained: "There's another door that opens onto the cliff side. I opened it fer 'em, when they went mad. All this," he finished, "was long ago, maybe half the time that I was here."

Human beings with heat guns and metal suits five hundred thousand years ago—locked up with the machine for weeks. He tried to picture them caught in this towering horror of a cage, with an ape thing looking down at them.

The picture grew so vivid that, for a moment, he could almost *see* the men staggering from thirst and hunger and insanity leaping down to the merciful death below.

The vastness of the elapsed time—and a crowding thought—abruptly dimmed the horrible vision. The interrupting thought grew enormous. He said at last, wearily:

"You must be a sap, Big Oaf. If men who could make and understand guns like that, couldn't make the machine reverse itself, how do you expect me to? In their deadly desperation, they must have tried everything."

"Huh!" said Big Oaf. Then he cursed his comprehension of the defeat that was here.

All Pendrake said was: "I'll have a look, anyway."

But there was nothing. The trouble was, the machine had no knobs or dials, or any levers. It lay hard on the rock, an expanse of smooth metal, with a deep indentation where it functioned.

The indentation was a regular cave. Pendrake walked in without much hope, and his pessimism was justified. The active wall was pierced with tens of thousands, *millions* of tiny, needle-sized holes.

He took out his lighter, and, holding the flickering flame in front of his master eye, tried to peer through the flame into one of the holes. Something glittered back at him. Shrugging, Pendrake came out of the chamber.

"The control room must be elsewhere," he said with decision. "In fact it has to be. There must be some kind of television control board from which they aim the machine."

He stood, studying the rock. "Or perhaps we ought to try our hand at drilling under the machine. Might be some connecting cables." He glanced up at Big Oaf. "You said something about other machines—"

He left the question hanging. A scowl was gathering on the beast man's hairy face. Big Oaf said curtly:

"You ain't seein' no other machines till we make a deal. And just in case you figger you got lots of time to lie around here gettin' all set with Devlin to knock me off my perch—that expedition is leavin' tomorrow for some more women.

"I wasn't gonna send it till t'other one got back, but I gotta hunch it's time we start pullin' down the caves between us and them Germans. You can go or not, any way it suits your play, but you better make up your mind fast. Now, come on, let's get back to town."

There was a tight silence between them as they walked. Pendrake's mind was seething. So Big Oaf was forcing issues, taking no chances.

He studied the waddling creature out of the corner of his eye, trying to read in the heavy, brutish countenance something of the purpose behind it. But impassivity was a norm of that facial structure. Only the implacable physical strength of the man stabbed forth in every movement, every writhing muscle.

Pendrake said finally: "How do you get up to the surface? There's no air or warmth up there, is there?"

He added before Big Oaf could speak: "What kind of quarters have the Germans made for themselves?"

A minute dragged. He thought: "He's not going to answer." But abruptly the other grunted:

"It's the lighted passages that's warm and got air in 'em. A whole bunch of 'em got right to the surface, some of 'em hidden damn smart by doors that look like rock or dirt. That's how we fooled the Germans so far. We just rush out of a new door and—"

A shout cut off his words. A man burst over the near hill, and ran toward them. Pendrake recognized him as a Big Oaf hanger-on. The fellow came up breathing hard.

"They're back with women. The men are going wild."

"They'd better watch out!" Big Oaf growled. "They know what they'll get if they touch any of 'em before I see 'em."

There were about thirty women huddled, and the motley throng gathered around them set up a wild yelling as Big Oaf arrived; lusting voices squealed with demand and counterdemand:

"I've only got one wife; I got a right to another." "It's my turn." "Big Oaf, you gotta." "I've earned—"

"Shurrup!"

The silence was instantaneous and deafening, and was broken finally by a bull-necked man who came up to Big Oaf and said:

"I guess that's the last woman rustlin' we do, boss. Those blankety-blank Germans were ready for us, and they seem to have explored all the cave approaches to their place. They followed us like a bunch of vigilantes, and we escaped only by knocking down that narrow cut-off at—"

"I know the one. How many dead?"

"Twenty-seven."

Big Oaf was silent for a moment, frowning, finally: "Well, let's get to the pickin'. I'm takin' one for myself and—"

"Jim!"

Pendrake had been listening grimly to the conversation. Now, he spun on his heel, and stared wildly at a lithely built young woman who was running toward him, crying as she ran. She flung herself into his infolding arm, and lay against him in a dead faint.

Over her limp, dark head, Pendrake gazed straight into Big Oaf's grinning face.

"Somebody you know?" the monster smirked.

"My wife!" Pendrake said; and there was a terrible sinking sensation in him. He found himself looking around for Devlin, but the man didn't seem to be in the crowd. "The Germans—"

He was vaguely aware as he talked that Big Oaf was looking beyond him. Now, suddenly, the hideous head nodded; simultaneously a warning voice yelled:

"Watch out!"

Pendrake came to, his head aching, and stared dizzily up at the heavy, anxious face of Devlin.

"What happened?" he muttered; and then in a surge of returning consciousness: "Where is she?"

Devlin said: "He's just taken her inside the stockade. Look, Pendrake, we're all ready to make the attack. Here's a knife—"

Pendrake grabbed it, and slipped it into his pocket. He said incisively: "Launch the attack when I've been inside the stockade about five minutes."

"But how are you going to get in?" Devlin gasped.

"Don't worry about that," Pendrake flung over his shoulder. To the guards he said: "Tell Big Oaf that I'm ready to talk business—"

Big Oaf came grinning out of his house. "I thought you'd see sense," he said—and then he grunted as the knife Pendrake threw buried itself seven inches in his great chest.

He tore the bloody thing out of his flesh, and grimacing, flung it to the ground.

"You get the pit for that," he said. "I'll just tie you up and—"

He came forward and—just like that—a chil' raced up Pendrake's back. Monstrous head bent low, animal arms spread out, the abnormal strength of the man showed in all its hideous power. In a single flash of terrible realization, Pendrake's confidence collapsed before the mighty thought that—

No man born in the last hundred thousand years could begin to have the superhuman strength necessary to defeat this hairy, titantic beast.

VIII.

THE whining winds of an early winter started to blow steadily in mid-September. On the thirtieth, snow fell; and nearly all New York State and Pennsylvania awoke on the morning of the first day of October to a world that was white and pure and peaceful.

That same day far, far to the south, Hoskins and Cree Lipton took off from the bulge of Brazil, and headed for Germany via Dakar, Algiers and Vichy.

The converted Hotel Adlon on Unter den Linden, Berlin, was a beehive of United Nation officers. In the great thick-carpeted Red Room on the second floor, the general officer commanding Occupation Forces showed them around:

"Now this," he said, "is what we call our murder map. And in view of the watch we've been keeping for you the past two weeks, this is an amazingly interesting document."

The map was thirty feet long and covered with colored pins—hardly a "document," Hoskins thought dryly. But he said nothing, simply watched and listened with an anxious will to hear the end result.

"Two weeks ago to the day," the general said, "we sent out the trucks all over what was formerly occupied Europe with the posters asking for information about the engine; the poster having been worded according to your cabled instructions."

He pulled out a package of cigarettes, offered them to the two men; Hoskins refused with a tiny inclination of his head, and waited impatiently while the others lit up. The officer went on:

"Now, before I tell you the extent and limitations of our success, I think it is necessary to describe briefly the situation that exists in Germany today. As you know, Hitler's method was to put a party man into every conceivable controlling position in every community.

"Naturally, we deposed all these petty fuehrers, replacing them with the staunchest pre-war democrats we could find. At this point we ran into a difficulty.

"The Nazis had anticipated us. In every district a secret Nazi cell had been built up with a secret leader under whose command were young, stone-hearted men specially trained to commit murder and to defeat all attempts to reconstitute democracy. The leaders we appointed hardly dare to make a move for fear of displeasing these hidden Nazi zone chiefs.

"It will straighten out in time, of course. As the Nazi youth go into their thirties, get married, their zest for danger will fade; and the new, younger generation is being trained our way.

"Nevertheless, political creeds like pretensions to thrones, die hard. And right now these people are committing about a thousand murders a week in Germany itself; about eight hundred more in the rest of Europe."

"How does this affect the finding of information about the engine and about the seven missing scientists whose bodies and whose families we couldn't find in the U.S.A.?" asked the heavy-jawed Lipton.

"We made a murder graph of every district in Europe," was the reply, "and as the appeal for information spread, watched day by day for any upswing in murders, the assumption being that great precautions would be taken by the Nazis in districts where information existed."

He faced the two men, a grim smile on his face.

"I report accordingly with mixed feelings, that the number of murders in two widely separated territories, one in Hohnstein in Saxony, the other in the town of Latzky, Bulgaria, increased out of all normal proportion."

"Bulgaria?" It was Lipton, his tone puzzled.

Hoskins said quickly: "After all, our closest watch has always been on Germany proper. They must have found it easier to set up interplanetary bases among certain sympathetic people."

The general looked at him from shrewd brown eyes.

"Exactly. We've made a very careful, cautious survey of those two districts. On the third day of our search we found a luxuriously furnished mine shaft at Hohn-

stein that evidently had been hastily abandoned.

"Questioning among townsmen," the officer went on, "elicited the information that a strange, zeppelin-like machine had been seen at night in the vicinity of the abandoned shaft."

"Good Heaven!"

Hoskins was scarcely aware that he had uttered the exclamation. He realized after a blank moment that he had been listening to the general with a vague impatience, and anxiety to have an end of words and to get actively on with the search. And now—

It was all done. The search was over; or almost over. All preliminaries were successfully concluded.

"Sir," he said warmly, "you are a remarkable man."

"Let me finish," the officer smiled broadly. "I'm not through yet."

He went on in a precise tone: "We have received altogether three—out of thousands —letters that are unmistakably genuine and relevant. The third, and most important, from a Frau Kreigmeier, wife of the man who has been Nazi party leader in Latzky for three years, arrived last night when I had already received word that you were on your way.

"Gentlemen"—his voice was quiet but confident—"by the end of the week you will have all the information that is still available on this continent.

"Naturally," he finished, and his careful phrasing of his promise had already brought the first shock to Hoskins, "the Nazis will have made every effort to insure that nothing vital is available. Nevertheless—"

By noon of October 4th they had the bodies. Seven older men, nine women, two girls and twelve youths lay side by side on the cold ground. Silently, they were loaded onto a line of hearses, and started on the journey to the coast from whence they would be shipped to America for more fitting burial.

After the hearses had disappeared down the road, Hoskins stood with the others in the little clump of bushes where they had been led by the plump husband of Frau Kreigmeier. A cold north wind was blowing, and the men in the armored cars that had escorted them were beating their hands together for warmth.

In spite of the cold, Hoskins noted ferociously, Herr Kreigmeier was sweating profusely. "If ever a man deserved the Shaposhenko punishment—" he thought.

But they had promised; the posters had promised—money, safe removal to any second-degree United Nations Mandate, and unlimited police protection.

The general came up: "The shovel men will finish up here," he said. "Let's go. I crave the warmth of a hotel room. You can mull over the successes and"—he looked quickly at Hoskins—"the failures."

There wasn't much. Silently, Hoskins sat in his chair before a roaring grate fire, and reread the translation of the single note they had resurrected:

Movement of anything requires a reverse movement, a cancellation, a balancing. A body moving between two points in space uses energy, which is another word for—reverse movement.

The science of reverse movement involves in its greatest functions a relationship between the microcosmos and the macrocosmos, between the infinitely small and the infinitely large. When a balance is established between two forces *of* the macrocosmos, one loses what the other gains. Engines puff uoisily, organic creatures laboriously perform their duties. Life seems infinitely hard.

However, when a reverse movement is created in the microcosmos for a movement occurring in the macrocosmos, then the ultimate in energy relations is obtained. There is also a complete balancing result; the law that movement is equal to reverse movement holds as rigidly as before—

"I'd hate," said Hoskins wearily, "to ask any patent office to grant a patent on that. I'm afraid we've reached the end of the engine trail; and that means my hope for quick action that would rescue Pendrake and his wife is gone. The rest of this stuff" —he flicked the typewritten sheets—"consists of notes on elementary radium reactions. There's a big gap somewhere, and I guess it's the hole in the empty sack we're holding."

He looked up. "Anything new from Hohnstein, Saxony, the other murder center?"

"Nothing," said Cree Lipton. "It was obviously only one of their ports of call for spaceships, hastily evacuated during our search. They've got their main equipment, all their secrets, on Mars or Venus—"

Hoskins cut in: "The Moon! Make no mistake about it. Mars and Venus are too far away even at their closest. And besides, they wouldn't dare let their young men and women see the kind of planet that Venus must be if you can believe the report of what the Lambton Land Project promised its settlers. It's blood and iron the leaders who escaped the Shaposhenko punishment have in mind for their Herrenvolk, and so

they'll keep them going on a diet of hard work and hard environment.

"Furthermore, they've only had eight months, and they can't have the quantity production necessary to cover longer routes.

"We'll have to locate all the supply centers like the ones at Hohnstein and Latzky, and force them to mine their own material with their limited means. Then when we attack—"

"When we *what!*"

Hoskins smiled savagely at Lipton's amazement, said with a blazing steadiness: "You don't think, Lipton, that just because we can't duplicate the engine they've stolen, that we're going to sit helplessly down here while they gather their strength on the Moon?"

"But what—"

"The idea came to me last night," Hoskins said, "and I could have kicked myself for not thinking of it before. You see, Lipton, space was actually conquered many years ago. Only we were blind fools."

The knob-jawed giant was on his feet, staring at him. "You're crazy!" he shouted.

Two quick strides brought him looming over the slighter man. "Quick," he said hoarsely, "what is it? Don't keep me here sweating."

As Hoskins told him quietly, the big man's jaw began to sag. He stood finally, a stunned look on his face. His voice was a whisper as he said:

"You've got it. Oh, man, you've got it!" He started for the door. "Let's go—back to Washington. There's no time to waste."

IX.

PENDRAKE backed, warily now. His first horror of the muscled colossus that was lumbering toward him was past. But the conviction that he must wait a favorable opening was an ugly surging along his nerves, a high, sustained thrill unlike anything he had ever known.

Unashamed of his reluctance, yet desperate in the need for haste, he waited the attack that Devlin and his men were to launch—anything that would distract the beast's attention.

When the attack came, with an abrupt roaring of men's voices, Pendrake flung himself forward, straight at the hairy man.

A bearlike arm reached out to grab him. He knocked it aside with one thrust of his hand and for a fleeting second had his opportunity.

The blow against that massive jaw nearly broke his fist. Even then all would have been well if the smash had accomplished its purpose.

It didn't. The monster did not as much as stagger; and instead of standing stunned for that instant of leeway that Pendrake had counted on to get away. Big Oaf plunged forward. His cable-thick arms closed like the jaws of a steam shovel.

The Neanderthal bellowed with triumph: "Gotcha!"

As the creature started his terrible squeeze, Pendrake jerked free his imprisoned arm, jabbed his fingers at Big Oaf's pig eyes, shoved hard—and tore his body from that deadly embrace.

It was his turn to cry out with the wild glee of a man in the full grip of battle lust: "You're licked, Big Oaf! You're through. You—"

With a hoarse cry, the hairy man leaped toward him. Laughing harshly, Pendrake danced back and—

Too late, he noticed the throne platform directly behind. His retreat, made easy by the Moon's gravity, was too swift for sudden halt. With a crash he fell flat on his back onto the platform.

It was over as swiftly as that. On his feet he could have won; in that one test of strength he had lost all doubt of that. But with Big Oaf kneeling on top of him, striking at him with body-breaking fists—in a minute Pendrake was clinging to his senses by the barest thread of consciousness. He was only dimly aware of being roughly and abruptly tied.

Slowly, his mind crept further out of the darkness, into fuller comprehension of the disaster that had befallen him. He said finally, thickly:

"You fool! Do you hear that fighting out there! It means you're through, no matter what you do to me. Better make a deal, Big Oaf, while there's still a chance.

One look into those creature eyes brought the sick knowledge that he had flung his tiny stone of hope into a shadowed world. All the beast in the man was to the fore. The enormous lips were drawn back; teeth protruded like fangs; Big Oaf snarled with little grunts of indescribable fury; he blazed finally with a guttural hoarseness:

"I'll just bar the gate from this side. That'll make my men fight harder 'cause they won't be able to retreat in here. And it'll make sure that you and me have our little show all to ourselves."

He lumbered massively out of Pendrake's

line of vision. There was the sound of timber crashing into position. Then the hairy thing came into sight again, grinning now. But when he spoke it was like a carnivore spitting rage:

"I'm gonna live here a million years, Pendrake, 'n' all that time your wife's gonna be one of my women."

Pendrake gritted: "You mad idiot, even if you win now, you'll die fast enough when the Germans come. And don't think they won't, either. You're just a bunch of bandits to them, a nuisance that they won't put up with for very long."

The words seemed not to touch the mind of the other. The man was, astonishingly, tugging at the throne platform. Pendrake watched, puzzled, as Big Oaf strained with all his enormous strength at the wooden thing.

Abruptly, the structure lifted. It came up; and reeled over with a crash as Big Oaf flung it away from him. Where its timbered sides had been lay the entrance to a cave.

"Those fools," Big Oaf said, with a withering contempt, "thought I had this platform here, and this stockade, because I wanted to play king. The blue men know the truth, but they won't learn any language but their own, so they can't tell even if they want to, which they don't."

He was bending over Pendrake as he finished. With a grunt, he heaved him to his shoulder, and jumped down into the lighted cave.

It was a twenty-foot drop. At the bottom, he tossed his prisoner unceremoniously to the cave floor, and climbed back to the surface.

"Don't get anxious," he called back mockingly, "I'm just gonna let the platform down into place."

He landed with a thud a minute later, and picked Pendrake up again. "This cave," he said then, grinning, "leads straight to the pit. I'm gonna lower you down to my ole pal, the devil beast, and watch the fun.

"It'll be some fun, feller, uh!"

The cave sloped gently downward, and presently began to widen. It opened abruptly into a vast room filled with metal shapes.

Machines! They shone in the reflected light of the cave walls and ceilings. They stood there, silent, secret witnesses to the glory of a people who had attained—not quite immortality, for they were dead—but a measure of greatness probably unequaled in the Solar System before or since and—

"You could have had those machines to find out how they worked," Big Oaf taunted, "and you could have had your wife. But now I'll wait until some other guy comes along who knows about machines, and ain't so fussy.

"Maybe I'll give your wife to him, too," he added as an afterthought, and bellowed with laughter.

Pendrake remained silent. They were out of the machine room now; once more the cave was narrowing. But he scarcely noticed those facts.

His mind was rocking back and forth like a swing swaying higher and more wildly with each surge. And every minute the load on that careening brain grew heavier. There was the engine, the unsuspecting Earth, Eleanor—

The thought ended as if it had been cut out of his brain with a knife. The blood drained from his cheeks. The muscles of his solar plexus drew so tight that it was like an acute appendix pain for—he saw the end of the cave.

A moment later Big Oaf trumpeted: "Here we are!"

He tossed Pendrake to the floor and stood over him, smirking down at him; there was no doubt at all that he was in the throes of sadistic joy.

"This opening over the pit," he grinned, catlike, "is nearly three hundred feet farther down than the surface, and about a quarter of a mile from where I showed you the devil beast. The only guys who've ever seen this cave are the ones that came too fast out of the machine from Earth.

"You saw," he confided gloatingly, "the way the machine's only a few feet from the edge of the cliff. There was a time when everything that came through ran right over the edge. I was just walkin', so I was able to jump back, but the devil beast and a lot of the animals it lived on until I came must have been *runnin'* down that trail on Earth.

"After I built the corral, and saved all the deer and buffalo and cattle that came through, I fed the beast the leavings; always I fed it myself, until now it knows my call. Lissen!"

He stepped abruptly to the cliff's edge, ten feet away, and uttered a low, piercing cry. For a long moment, then, he stood staring down, facing away from Pendrake, stood crouching, slightly bow-legged, a squat, hairy, inhuman shape, a man thing spawned at the dawn of pre-history, a creature out of a hideous, an impossible dream.

But—*facing away!* Shaking in every

nerve, shedding tiny rivers of perspiration, Pendrake slid forward on his back. His wrist was tied to one ankle, but his other leg was free.

Free to kick, free to—

Big Oaf turned. "He's comin'," he said. He seemed not to notice the strained body, the strained expression of his captive. He said in a matter-of-fact tone that was more terrible than all the passion and fury that had gone before:

"I'm gonna let you slide down on a rope, untyin' the bonds around your wrist just before I lower you over the edge. That way you'll be able to do a little runnin' when you get down. The beast likes that; it gives him exercise."

There was a rope neatly coiled at one side of the cave. As he picked it up and tossed one end over the abyss, Big Oaf explained precisely:

"I keep this here handy. You ain't the first, you know, who's gone over secret like this. Notice how one end's tied to a fence post."

He waddled over to Pendrake, knelt beside him and started to untie the cord that bound him.

"Funny," he philosophized, "the kind of stuff the men have brought with 'em from Earth: Rope, a wagon load of tools, rifles, revolvers—I got 'em all. Some of it, mostly ammunition, is hidden in this cave, and the rest in other caves they don't know about that I closed up.

"I'm gonna use those guns if Devlin wins. It don't take long to kill a hundred men from ambush if you've got bullets.

"You see," he finished with a grin, "I've got it all figgered. It—"

On Earth it wouldn't have worked. A three-hundred-pound body not quite in position for a good shove would have staggered back a couple of feet, then regained balance.

The Moon was different. The body weighed only fifty pounds, and the leg that shoved it strove desperately to act with all the force of a stick of exploding dynamite.

Big Oaf stumbled back, fighting for balance. If there had been one more step behind him, he might have made it.

But that step he took into the abyss.

It took minutes to wriggle out of the half-untied but clinging bonds. And then there was another more timeless period while the blood tingled back into the numbed members and while he lay almost sick with reaction.

Finally, with a desperate will, Pendrake scrambled to the edge of the cliff and looked down.

Big Oaf was just getting to his feet on the grass below, and the sabre-toother tiger was circling him.

"Hitler!" The cry rang out over the valley. "Hitler, how does it feel?"

Pendrake thought: "Did I shout that?"

His mind must have been turned by those minutes on the cliff's edge. Because even now that he recognized that it had been his voice, no shame came, nothing but a sense of the utter rightness of every mad syllable.

It fitted. How it fitted!

"Big Oaf," he screamed, "have you ever heard of the Shaposhenko punishment? There's an article in the beginning of it that says: '—he who evokes the Beast in Man, and feeds the Beast with cunning purpose, let him suffer from the Beast according to his measure. Let—' "

Pendrake stopped. Then he stared. Below him, Big Oaf was on his feet, backing away from the tiger. That was normal enough.

It was the saber tooth that was unnormal. The great animal was whining in unmistakable puzzlement—*and backing away from the hairy man!*

Backing away— It couldn't be fear. Nothing alive on Earth in the last ten million years could have brought one tremor of fear to that savage heart.

Big Oaf was shaking his head like a stunned ox; and Pendrake's attention concentrated on the man, and forgot the devil beast, even as the animal darted out of sight.

He saw that the Neanderthal was heading for the rope that hung down from the cave.

With a gasp, he snatched the rope out of his reach, thinking for the first time: "He fell seventy yards, and lived. That would be about forty feet on Earth. Could be—"

"Pendrake!"

The squat body was directly below. The unsightly head glanced fearfully toward where the tiger had disappeared; then:

"Pendrake, it recognized me as its feeder, but it'll be back. Pendrake, let that rope down."

Pendrake felt no mercy. His body was as cold as ice itself with the freezing thoughts that were in his mind. His whole being throbbed with the bleak yet utterly intense words that poured from his lips:

"Go to all the hells you've ever sent other men to. Go and lie in the belly of the beast you've nurtured with the blood

of your victims. May the god who made you have pity on you; I have none."

"I'll promise anything!"

His rage lessened not, but grew. A picture came of the women who must have shuddered at the very sight, let alone the touch of the monstrosity that was now pleading with a human voice for a quality of mercy it had never shown to anyone. He thought of Eleanor—

And his heart steeled; his mind chilled to a new depth of deadly will.

"Promises," he mocked; and his laughter rang out demoniacally over that ancient valley of the long dead Moon. "Now we're back to Hitler, when he finally started to run: all the promises, the compromises, the deals he offered—and he never understood how hopeless it was. He—"

There was a flicker of yellow-red-blue-green in the brush a hundred yards to the right. A moment before, Pendrake had longed for the return of the mighty killer. But now—revulsion came swift to emotions that had been plucked raw.

Horror flashed in waves along his nerves. "I'm mad," he thought. "One man can't administer justice. Letting another human being go to a death like this. After all, it *wasn't* a true parallel. It—"

Frantically, he began to lower the rope. "Quick," he cried, "we can talk when you're out of reach of—"

The rope sagged with weight. Glassily, Pendrake watched the desperate man in his fight for life, watched the tiger.

The animal paced wildly up and down in an obvious fever of excitement. It kept looking up with eyes of yellow fire, roaring uneasily, and with an unmistakable gathering awareness of escaping food. Suddenly, whatever tie had held it back, whatever tie of fantastically ancient companionship had bound it to the man, snapped.

It ran back, then turned toward the cliff again, and became a streak of blazing color against the gray-brown walls. A hundred, a hundred and fifty, a hundred and eighty feet it raced up that perpendicular wall. And had its prey. The two bodies went down with a crash.

After a minute, the squealing died. There was a crunching of bones and a slavering sound so horrible that Pendrake drew back nauseated.

And then someone was yelling:

"Pendrake! We heard your voice. Pendrake, where are you? The Germans are coming. Pendrake—"

X.

THE winter clung. The snow seemed determined to stay forever. When it finally dissipated, the new glistening all plastic Interplanetary Building was opened with a triumphant fanfare; and the great appointment had already come to Hoskins: Commissioner—Chairman—

"It is absolutely unfair," he said to Cree Lipton, "that I should have this. There are a hundred men who laid the groundwork and fought in obscurity. Frankly, I accepted only when I heard that the notorious ex-Governor Cartwright, who was defeated in the last elections, was gunning for the job as a sort of pension for services rendered to the party—"

"I wouldn't worry about it," Lipton said. "You can help those chaps more than they could ever help themselves. By the way, did you see the announcement about Venus? Recognition for the Lambton colony there as a United Nations first-degree Mandate, with Venusian citizenship already given a special first-class status. Professor Grayson and the other scientists and their families didn't die in vain."

Hoskins nodded. "It's a great victory, but the danger of important inventions held secret by well-meaning individuals being stolen and misused—"

He was interrupted: "Listen, Ned, what I really came to see you about—put on your hat, come with me."

Hoskins shook his head, smiling. "Can't be did, old man. The reports from our successful expedition to the Moon are just reaching the flood stage. There's one really curious item—"

He took a folder from a drawer, and flipped over several pages of foolscap. " 'The Nazi prisoners claim,' " he read, " 'that they were captured easily because their military forces had for months been engaged in digging along collapsed tunnels trying to root out some creatures who live inside the Moon. They claim that these beings are human. Our own investigations have found only caves that sooner or later come to a dead end—' "

He saw that Lipton was looking at his watch. The F.B.I. agent caught his glance, and apologized:

"I'm sorry to break in on you, but the zero hour is approaching, and we shall just have time to fly to New York and be in at the kill."

Hoskins gasped: "You don't mean—"

He leaped to his feet, grabbed his hat and coat. "Come on. Let's go!"

When the uproar started, the stocky man glanced sharply at the leader.

"Excellency—" he began.

He stopped as he saw that the gaunt man was sitting with the phone still in his fingers, staring straight ahead of him. Uneasily, Birdman watched as the receiver dropped finally from the other's fingers, watched as the man sat there his face like a dark, lifeless mask.

Birdman ventured: "Excellency, you were saying just before the phone lights came on that now that our positions on the Moon and nearly all our engines have been captured, we would use those that escaped as a nucleus for piratical depradations on the interplanetary highways that will now be opened up. We would become, you said, the pirates of the twenty-first and twenty-second centuries. We—"

He stopped, froze in horror. The long, bony fingers of the other were groping into a desk drawer. They came out holding a Mauser automatic.

As Lipton and Hoskins and a dozen other men burst into the room, the stocky man was on his feet facing the spare-built man at the desk, who was raising a revolver up to his forehead.

"Excellency," Birdman was crying wildly, "you lied. You *are* afraid of the Shaposhenko punishment."

The pistol blared; and the gaunt man twisted in his brief agony, and slid to the floor. Birdman stood over him with a numb terror; he felt but dimly the presence of the intruders.

As he was led away, there was in him only wave after wave of utter disillusionment.

They were still perspiring. The cave where they had been frantically trying to bring down the roof was too narrow for so many men; and Pendrake, who was gasping with the rest for his share of the oxygen-depleted air, was just thinking: "Have to order the crew back—"

At that moment the messenger arrived. Pendrake listened in a stark wonder at the man who had come from Devlin: "A German prisoner, who died, says their camps are being attacked by American armies. Whatever the reason, the Nazis are withdrawing toward the surface—"

Pendrake said: "Impossible! "It's a trick. Nobody on Earth even knows about the Nazis being here, and besides, how did they get to the Moon so swiftly. There couldn't be another engine lying in a hillside—and the Nazis wouldn't give up after all these months of digging after us. Where's Devlin?"

But an hour later there was no doubt. Whatever the reason, the fight was over. "We'll have to send a patrol to find out what happened!" Pendrake said.

He saw with a start that Devlin was staring at him queerly. "Look, boss," the man said diffidently, "I'll lead that patrol. As for you —well—the men have been wonderin' what you and your wife are going to do now.

"Wait!" he went on in a violent tone, although Pendrake had made no attempt to interrupt. "This is a serious business. We're all pretty well agreed that this place oughtn't to get known. We've got something here that can't be shared with a billion people, at least not until somebody figures out how it works.

"What I mean is, go and talk things over with your wife and— What's the matter?"

Pendrake was smiling. "My wife and I have already talked things over. You may remember that I told you that our first child was born dead."

"Yes?"

"What I didn't tell you is that she can't have any more children. That's what she was taking so hard. Our blood dies forever with us. We've *got* to be personally immortal.

"What we have in mind," he went on swiftly, "will mean bringing a few carefully selected teachers from Earth, and equipment. If we can get agreement on it, we'll start a system of education down here that will take full advantage of the gradual increase in everybody's intelligence. Big Oaf was proof that such an increase does take place. I've even got an idea for the tiger for some time in the future when we get these Lunar machines working—"

"Listen," said Devlin, "what I get out of these words is that you're staying. Am I right?"

"Right."

They grinned at each other. Then they shook hands. Pendrake said finally:

"We'd better get going. I want us, if possible, to get one of the atomic engines, and I've got to see those American forces with my own eyes—"

Four days later he saw—swarms of ships with great streaks of red fire flaring from tubes in the rear. Pendrake took one long startled look, and gasped:

"Rocket ships!"

continued on page 64.

Gallegher Plus

By Lewis Padgett

Gallegher, as usual, was in a jam. It wasn't his fault; it was due to Gallegher-plus, the highly successful—if sufficiently high!—other self.

GALLEGHER peered dimly through the window at the place where his back yard should have been and felt his stomach dropping queasily into that ridiculous, unlikely hole gaping there in the earth. It was big, that hole. And deep. Almost deep enough to hold Gallegher's slightly colossal hangover.

But not quite. Gallegher wondered if he should look at the calendar, and then decided against it. He had a feeling that several thousand years had passed since the beginning of the binge. Even for a man with his thirst and capacity, it had been one hell of a toot.

"Toot," Gallegher mourned, crawling toward the couch and collapsing on it. "Binge is far more expressive. Toot makes me think of fire engines and boat whistles, and I've got those in my head, anyway—all sounding off at once." He reached up weakly for the siphon of the liquor organ, hesitated, and communed briefly with his stomach.

GALLEGHER: Just a short one, maybe?

STOMACH: Careful, there!

GALLEGHER: A hair of the dog—

STOMACH: O-O-O-OH!

GALLEGHER: Don't do that! I need a drink. My back yard's disappeared.

STOMACH: I wish I could.

At this point the door opened and a robot entered, wheels, cogs, and gadgets moving rapidly under its transparent skin plate. Gallegher took one look and closed his eyes, sweating.

"Get out of here," he snarled. "I curse the day I ever made you. I hate your revolving guts."

"You have no appreciation of beauty," said the robot in a hurt voice. "Here. I've brought you some beer."

"Hm-m-m!" Gallegher took the plastibulb from the robot's hand and drank thirstily. The cool catnip taste tingled refreshingly against the back of his throat. "A-ah," he said, sitting up. "That's a little better. Not much, but—"

"How about a thiamin shot?"

"You know I'm allergic to the stuff," Gallegher told his robot morosely. "I'm cursed with thirst. Hm-m-m!" He looked at the liquor organ. "Maybe—"

"There's a policeman to see you."

"A what?"

"A policeman. He's been hanging around for quite a while."

"Oh," Gallegher said. He stared into a corner by an open window. "What's that?"

It looked like a machine of some curious sort. Gallegher eyed it with puzzled interest and a touch of amazement. No doubt he had built the damned thing. That was the only way the erratic scientist ever worked. He'd had no technical training, but, for some weird reason, his subconscious mind was gifted with a touch of genius. Conscious, Gallegher was normal enough, though erratic and often drunk. But when his demon subconscious took over, anything was liable to happen. It was in one of these sprees that he had built this robot, spending weeks thereafter trying to figure out the creature's basic purpose. As it turned out, the purpose wasn't an especially useful one, but Gallegher kept the robot around, despite its maddening habit of hunting up mirrors and posturing vainly before them, admiring its metallic innards.

"I've done it again," Gallegher thought. Aloud he said, "More beer, stupid. Quick."

As the robot went out, Gallegher uncoiled his lanky body and wandered across to the machine, examining it curiously. It was not in operation. Through the open window extended some pale, limber cables as thick as his thumb; they dangled a foot or so over the edge of the pit where the back yard should have been. They ended in—Hm-m-m! Gallegher pulled one up and peered at it. They ended in metal-rimmed holes, and were hollow. Odd.

The machine's over-all length was approximately two yards, and it looked like an animated junk heap. Gallegher had a habit of using makeshifts. If he couldn't find the

right sort of connection, he'd snatch the nearest suitable object—a buttonhook, perhaps, or a coat hanger—and use that. Which meant that a qualitative analysis of an already-assembled machine was none too easy. What, for example, was that fibroid duck doing wrapped around with wires and nestling contentedly on an antique waffle iron?

"This time I've gone crazy," Gallegher pondered. "However, I'm not in trouble as usual. Where's that beer?"

The robot was before a mirror, staring fascinated at his middle. "Beer? Oh, right here. I paused to steal an admiring little glance at me."

Gallegher favored the robot with a foul oath, but took the plastibulb. He blinked at the gadget by the window, his long, bony face twisted in a puzzled scowl. The end product—

The ropy hollow tubes emerged from a big feed box that had once been a wastebasket. It was sealed shut now, though a gooseneck led from it into a tiny convertible dynamo, or its equivalent. "No," Gallegher thought. "Dynamos are big, aren't they? Oh, I wish I'd had a technical training. How can I figure this out, anyway?"

There was more, much more, including a square gray metal locker—Gallegher, momentarily off the beam, tried to estimate its contents in cubic feet. He made it four hundred eighty-six, which was obviously wrong, since the box was only eighteen inches by eighteen inches by eighteen inches.

The door of the locker was closed; Gallegher let it pass temporarily and continued his futile investigation. There were more puzzling gadgets. At the very end was a wheel, its rim grooved, diameter four inches.

"End product—what? Hey, Narcissus."

"My name is not Narcissus," the robot said reprovingly.

"It's enough to have a look at you, without trying to remember your name," Gallegher snarled. "Machines shouldn't have names, anyhow. Come over here."

"Well?"

"What *is* this?"

"A machine," the robot said, "but by no means as lovely as I."

"I hope it's more useful. What does it do?"

"It eats dirt."

"Oh. That explains the hole in the back yard."

"There *is* no back yard," the robot pointed out accurately.

"There is."

"A back yard," said the robot, quoting in a confused manner from Thomas Wolfe, "is not only back yard but the negation of back yard. It is the meeting of Space of back yard and no back yard. A back yard is finite and unextended dirt, a fact determined by its own denial."

"Do you know what you're talking about?" Gallegher demanded, honestly anxious to find out.

"Yes."

"I see. Well, try and keep the dirt out of your conversation. I want to know why I built this machine."

"Why ask me? I've been turned off for days—weeks, in fact."

"Oh, yeah. I remember. You were posing before the mirror and wouldn't let me shave that morning."

"It was a matter of artistic integrity. The planes of my functional face are far more coherent and dramatic than yours."

"Listen, Narcissus," Gallegher said, keeping a grip on himself. "I'm trying to find out something. Can the planes of your blasted functional brain follow that?"

"Certainly," Narcissus said coldly. "I can't help you. You turned me on again this morning and fell into a drunken slumber. The machine was already finished. It wasn't in operation. I cleaned house and kindly brought you beer when you woke up with your usual hangover."

"Then kindly bring me some more and shut up."

"What about the policeman?"

"Oh, I forgot him. Uh . . . I'd better see the guy, I suppose."

Narcissus retreated on softly padding feet. Gallegher shivered, went to the window, and looked out at that incredible hole. Why? How? He ransacked his brain. No use, of course. His subconscious had the answer, but it was locked up there firmly. At any rate, he wouldn't have built the machine without some good reason. Or would he? His subconscious possessed a peculiar, distorted sort of logic. Narcissus had originally been intended as a super-beer-can opener.

A muscular young man in a dapper uniform came in after the robot. "Mr. Gallegher?" he asked.

"Yeah."

"Mr. Galloway Gallegher?"

"The answer's still 'yeah.' What can I do for you?"

"You can accept this summons," said the cop. He gave Gallegher a folded paper.

The maze of intricate legal phraseology made little sense to Galleger. "Who's Dell Hopper?" he asked. "I never heard of him."

"It's not my pie," the officer grunted. "I've served the summons; that's as far as I go."

He went out. Gallegher peered at the paper. It told him little.

Finally, for lack of something better to do, he televised an attorney, got in touch with the bureau of legal records, and found the name of Hopper's lawyer, a man named Trench. A corporation lawyer at that. Trench had a battery of secretaries to take calls, but by dint of threats, curses and pleas Gallegher got through to the great man himself.

On the telescreen Trench showed as a gray, thin, dry man with a clipped mustache. His voice was file-sharp.

"Mr. Gallegher? Yes?"

"Look," Gallegher said, "I just had a summons served on me."

"Ah, you have it then. Good."

"What do you mean, good? I haven't the least idea what this is all about."

"Indeed," Trench said skeptically. "Perhaps I can refresh your memory. My client, who is soft-hearted, is not prosecuting you for slander, threat or bodily harm, or assault and battery. He just wants his money back—or else value received."

Gallegher closed his eyes and shuddered. "H-he does? I . . . ah . . . did I slander him?"

"You called him," said Trench, referring to a bulky file, "a duck-footed cockroach, a foul-smelling Neanderthaler, and either a dirty cow or a dirty *cao*. Both are terms of opprobrium. You also kicked him."

"When was this?" Gallegher whispered.

"Three days ago."

"And—you mentioned money?"

"A thousand credits, which he paid you on account."

"On account of what?"

"A commission you were to undertake for him. I was not acquainted with the exact details. In any case, you not only failed to fulfill the comission, but you refused to return the money."

"Oh. Who is Hopper, anyway?"

"Hopper Enterprises, Inc.—Dell Hopper, entrepreneur and impresario. However, I think you know all this. I will see you in court, Mr. Gallegher. And, if you'll forgive me, I'm rather busy. I have a case to prosecute today, and I rather think the defendant will get a long prison sentence."

"What did he do?" Gallegher asked weakly.

"Simple case of assault and battery," Trench said. "Good-by."

His face faded from the screen. Gallegher clapped a hand to his forehead and screamed for beer. He went to his desk, sucking at the plastibulb with its built-in refrigerant, and thoughtfully examined his mail. Nothing there. No. clue.

A thousand credits— He had no recollection of getting them. But the cash book might show—

It did. Under dates of several weeks back, it said:

Rec'd D. H.—com.—on acc't—c1000
Rec'd J. W.—com.—on acc't—c1500
Rec'd Fatty—com.—on acc't—c800.

Thirty-three hundred credits! And the bank book had no record of that sum. It showed merely a withdrawal of seven hundred credits, leaving about fifteen still on hand.

Gallegher moaned and searched his desk again. Under a blotter he found an envelope he had previously overlooked. It contained stock certificates—both common and preferred—for something called Devices Unlimited. A covering letter acknowledged receipt of four thousand credits, in return for which payment stock had been issued to Mr. Galloway Gallegher, as ordered—

"Murder," Gallegher said. He gulped beer, his mind swirling. Trouble was piling up in triplicate. D. H.—Dell Hopper—had paid him a thousand credits to do something or other. Someone whose initials were J. W. had given his fifteen hundred credits for a similar purpose. And Fatty, the cheapskate, had paid only eight hundred credits on account.

"Why?

Only Gallegher's mad subconscious knew. That brainy personality had deftly arranged the deals, collected the dough, depleted Gallegher's personal bank account—cleaning it out—and buying stock in Devices Unlimited. Ha!

Gallegher used the televisor again. Presently he beamed his broker.

"Arnie?"

"Hi, Gallegher," Arnie said, looking up at the teleplate over his desk. "What's up?"

"I am. At the end of a rope. Listen, did I buy some stock lately?"

"Sure. In Devices—DU."

"Then I want to sell it. I need the dough, quick."

"Wait a minute." Arnie pressed buttons. Current quotations were flashing across his wall, Gallegher knew.

"Well?"

"No soap. The bottom's dropped out. Four asked, nothing bid."

"What did I buy at?"

"Twenty."

Gallegher emitted the howl of a wounded wolf. *"Twenty?* And you let me do that?"

"I tried to argue you out of it," Arnie said wearily. "Told you the stock was skidding. There's a delay in a construction deal or something—not sure just what. But you said you had inside info. What could I do?"

"You could have beaten my brains out," Gallegher said. "Well, never mind. It's too late now. Have I got any other stock?"

"A hundred shares of Martian Bonanza."

"Quoted at?"

"You could realize twenty-five credit on the whole lot?"

"What are the bugles blowin' for?" Gallegher murmured.

"Huh?"

"I'm dreadin' what I've got to watch—"

"I know," Arnie said happily. "Danny Deever."

"Yeah," Gallegher agreed. "Danny Deever. Sing it at my funeral, chum." He broke the beam.

Why, in the name of everything holy and unholy, had he bought that DU stock?

What had he promised Dell Hopper of Hopper Enterprises?

Who were J. W. (fifteen hundred credits) and Fatty (eight hundred credits)?

Why was there a hole in the place of his back yard?

What and why was that confounded machine his subconscious had built?

He pressed the directory button on the televisor, spun the dial till he located Hopper Enterprises, and called that number.

"I want to see Mr. Hopper."

"Your name?"

"Gallegher."

"Call our lawyer, Mr. Trench."

"I did," Gallegher said. "Listen—"

"Mr. Hopper is busy."

"Tell him," Gallegher said wildly, "that I've got what he wanted."

That did it. Hopper focused in, a buffalo of a man with a mane of gray hair, intolerant jet-black eyes, and a beak of a nose. He thrust his jutting jaw toward the screen and bellowed, "Gallegher? For two pins I'd—" He changed his tune abruptly. "You called Trench, eh? I thought that'd do the trick. You know I can send you to prison, don't you?"

"Well, maybe—"

"Maybe nothing! Do you think I come personally to see every crackpot inventor who does some work for me? If I hadn't been told over and over that you were the best man in your field, I'd have slapped an injunction on you days ago!"

Inventor?

"The fact is," Gallegher began mildly, "I've been ill—"

"In a pig's eye," Hopper said coarsely. "You were drunk as a lord. I don't pay men for drinking. Did you forget those thousand credits were only part payment—with nine thousand more to come?"

"Why . . . why, n-no. Uh . . . nine thousand?"

"Plus a bonus for quick work. You still get the bonus, luckily. It's only been a couple of weeks. But it's lucky for you you got the thing finished. I've got options on a couple of factories already. *And* scouts looking out for good locations, all over the country. Is it practical for small sets, Gallegher? We'll make our steady money from them, not from the big audiences."

"Tchwuk," Gallegher said. "Uh—"

"Got it there? I'm coming right down to see it."

"Wait! Maybe you'd better let me add a few touches—"

"All I want is the idea," Hopper said. "If that's satisfactory, the rest is easy. I'll call Trench and have him quash that summons. See you soon."

He blanked out.

Gallegher screamed for beer. "And a razor," he added, as Narcissus padded out of the room. "I want to cut my throat."

"Why?" the robot asked.

"Just to amuse you, why else? Get that beer."

Narcissus brought a plastibulb. "I don't understand why you're so upset," he remarked. "Why don't you lose yourself in rapturous contemplation of my beauty?"

"Better the razor," Gallegher said glumly. "Far better. Three clients, two of whom

I can't remember at all, commissioning me to do jobs I can't remember, either. Ha!"

Narcissus ruminated. "Try induction," he suggested. "That machine—"

"What about it?"

"Well, when you get a commission, you usually drink yourself into a such a state that your subconscious takes over and does the job. Then you sober up. Apparently that's what happened this time. You made the machine, didn't you?"

"Sure," Gallegher said, "but for which client? I don't even know what it does."

"You could try it and find out."

"Oh. So I could. I'm stupid this morning."

"You're always stupid," Narcissus said. "And very ugly, too. The more I contemplate my own perfect loveliness, the more pity I feel for humans."

"Oh, shut up," Gallegher snapped, feeling the uselessness of trying to argue with a robot. He went over to the enigmatic machine and studied it once more. Nothing clicked in his mind.

There was a switch, and he flipped it. The machine started to sing "St. James Infirmary."

"—to see my sweetie there
She was lying on a marble sla-a-ab—"

"I see it all," Gallegher said in a fit of wild frustration. "Somebody asked me to invent a phonograph."

"Wait," Narcissus pointed out. "Look at the window."

"The window. Sure. What about it? *Wh*—" Gallegher hung over the sill, gasping. His knees felt unhinged and weak. Still, he might have expected something like this.

The group of tubes emerging from the machine were rather incredibly telescopic. They had stretched down to the bottom of the pit, a full thirty feet, and were sweeping around in erratic circles like grazing vacuum cleaners. They moved so fast Gallegher couldn't see them except as blurs. It was like watching the head of a Medusa who had contracted St. Vitus' Dance and transmitted the ailment to her snakes.

"Look at them whiz," Narcissus said contemplatively, leaning heavily on Gallegher. "I guess that's what made the hole. They eat dirt."

"Yeah," the scientist agreed, drawing back. "I wonder why. Dirt— Hm-m-m. Raw material." He peered at the machine, which was wailing:

—can search the wide world over
And never find another sweet man like me.

"Electrical connections," Gallegher mused, cocking an inquisitive eye. "The raw dirt does in that one-time wastebasket. Then what? Electronic bombardment? Protons, neutrons, positrons—I *wish* I knew what those words meant," he ended plaintively. "If only I'd had a college education!"

"A positron is—"

"Don't tell me," Gallegher pleaded. "I'll only have semantic difficulties. I know what a positron is, all right, only I don't identify it with that name. All I know is the extensional meaning. Which can't be expressed in words, anyhow."

"The intensional meaning can, though," Narcissus pointed out.

"Not with me. As Humpty Dumpty said, the question is, which is to be master. And with me it's the word. The damn things scare me. I simply don't *get* their intensional meanings."

"That's silly," said the robot. "Positron has a perfectly clear connotation."

"To you. All it means to me is a gang of little boys with fishtails and green whiskers. That's why I never can figure out what my sub-conscious has been up to. I have to use symbolic logic, and the symbols . . . ah, shut up," Gallegher growled. "Why should I argue about semantics with you, anyhow?"

"You started it," Narcissus said.

Gallegher glared at the robot and then went back to the cryptic machine. It was still eating dirt and playing "St. James Infirmary."

"Why should it sing that, I wonder?"

"You usually sing it when you're drunk, don't you? Preferably in a barroom."

"That solves nothing," Gallegher said shortly. He explored the machine. It was in smooth, rapid operation, emitting a certain amount of heat, and something was smoking. Gallegher found a lubricating valve, seized an oil can, and squirted. The smoke vanished, as well as a faint smell of burning.

"Nothing comes out," Gallegher said, after a long pause of baffled consideration.

"There?" The robot pointed.

Gallegher examined the grooved wheel that was turning rapidly. Just above it was a small circular aperture in the smooth hide of a cylindrical tube. Nothing seemed to be coming out of that hole, however.

"Turn the switch off," Gallegher said. Narcissus obeyed. The valve snapped shut and the grooved wheel stopped turning. Other activity ceased instantly. The music died. The tentacles stretched out the window stopped swirling, and shortened to their normal inactive length.

"Well, there's apparently no end product," Gallegher remarked. "It eats dirt and digests it completely. Ridiculous."

"Is it?"

"Sure. Dirt's got elements in it. Oxygen, nitrogen—there's granite under New York, so there's aluminum, sodium, silicon—lots of things. No sort of physical *or* chemical change could explain this."

"You mean something ought to come out of the machine?"

"Yes," Gallegher said. "In a word, exactly. I'd feel a lot better if something did. Even mud."

"Music comes out of it," Narcissus pointed out. "If you can truthfully call that squalling music."

"By no stretch of my imagination can I bring myself to consider that loathsome thought," the scientist denied firmly. "I'll admit my subconscious is slightly nuts. But it's got logic, in a mad sort of way. It wouldn't build a machine to convert dirt into music, even if such a thing's possible."

"But it doesn't do anything else, does it?"

"No. Ah. Hm-m-m. I wonder what Hopper asked me to make for him. He kept talking about factories and audiences."

"He'll be here soon," Narcissus said. "Ask him."

Gallegher didn't bother to reply. He thought of demanding more beer, rejected the idea, and instead used the liquor organ to mix himself a pick-me-up of several liqueurs. After that he went and sat on a generator which bore the conspicuous label of Monstro. Apparently dissatisfied, he changed his seat to a smaller generator named Bubbles.

Gallegher always thought better atop Bubbles.

The pick-me-up had oiled his brain, fuzzy with alcohol fumes. A machine without an end product—dirt vanishing into nothingness. Hm-m-m. Matter cannot disappear like a rabbit popping into a magician's hat. It's got to go somewhere. Energy?

Apparently not. The machine didn't manufacture energy. The cords and sockets showed that, on the contrary, it made use of electric power to operate.

And so—

What?

Try it from another angle. Gallegher's subconscious, Gallegher Plus, had built the device for some logical reason. The reason was supplied by his profit of thirty-three hundred credits. He'd been paid that sum, by three different people, to make—maybe—three different things.

Which of them fitted the machine?

Look at it as an equation. Call clients a, b, and c. Call the purpose of the machine—not the machine itself, of course—x. Then a (or) b (or) c equals x.

Not quite. The term a wouldn't represent Dell Hopper; it would symbolize what he wanted. And what he wanted must necessarily and logically be the purpose of the machine.

Or the mysterious J. W., or the equally mysterious Fatty.

Well, Fatty was a shade less enigmatic. Gallegher had a clue, for what it was worth. If J. W. was represented by b, Fatty would be c plus adipose tissue. Call adipose tissue t, and what did you get?

Thirsty.

Gallegher had more beer, distracting Narcissus from his posturing before the mirror. He drummed his heels against Bubbles, scowling, a lock of dark hair falling lankly over his eyes.

Prison?

Uh! No, there must be some other answer, somewhere. The DU stock, for example. Why had Gallegher Plus bought four thousand credits' worth of the stuff when it was on the skids?

If he could find the answer to that, it might help. For Gallegher Plus did nothing without purpose. What was Devices Unlimited, anyway?

He tried the televisor Who's Who in Manhattan. Luckily Devices was corporated within the State and had business offices here. A full-page ad flipped into view.

DEVICES UNLIMITED
WE DO EVERYTHING!
RED 5-1400-M.

Well, Gallegher had the firm's 'visor number, which was something. As he began to call RED, a buzzer murmured, and Narcissus turned petulantly from the mirror and went off to answer the door. He returned in a moment with the bisonlike Mr. Hopper.

"Sorry to be so long," Hopper rumbled. "My chauffeur went through a light, and a cop stopped us. I had to bawl the very devil out of him."

"The chauffeur"

"The cop. Now where's the stuff?"

Gallegher licked his lips. Had Gallegher Plus actually kicked this mountainous guy in the pants? It was not a thought to dwell upon.

He pointed toward the window. "There." Was he right? Had Hopper ordered a machine that ate dirt?"

The big man's eyes widened in surprise. He gave Gallegher a swift, wondering look, and then moved toward the device, inspecting it from all angles. He glanced out the window, but didn't seem much interested in what he saw there. Instead, he turned back to Gallegher with a puzzled scowl.

"You mean this? A totally new principle, is it? But then it must be."

No clue there. Gallegher tried a feeble smile. Hopper just looked at him.

"All right," he said. "What's the practical application?"

Gallegher groped wildly. "I'd better show you," he said at last, crossing the lab and flipping the switch. Instantly the machine started to sing "St. James Infirmary." The tentacles lengthened and began to eat dirt. The hole in the cylinder opened. The grooved wheel began to revolve.

Hopper waited.

After a time he said, "Well?"

"You—don't like it?"

"How should I know? I don't even know what it does. Isn't there any screen?"

"Sure," Gallegher said, completely at a loss. "It's inside that cylinder."

"In—*what?*" Hopper's shaggy brows drew down over his jet-black eyes. *"Inside that cylinder?"*

"Uh-huh."

"For—" Hopper seemed to be choking. "What good is it there? Without X-ray eyes, anyhow?"

"Should it have X-ray eyes?" Gallegher muttered, dizzy with bafflement. "You wanted a screen with X-ray eyes?"

"You're still drunk!" Hopper snarled. "Or else you're crazy!"

"Wait a minute. Maybe I've made a mistake—"

"A mistake!"

"Tell me one thing. Just what did you ask me to do?"

Hopper took three deep breaths. In a cold, precise voice he said, "I asked you if you could devise a method of projecting three-dimensional images that could be viewed from any angle, front, back or side, without distortion. You said yes. I paid you a thousand credits on account. I've taken options on a couple of factories so I could begin manufacturing without delay. I've had scouts out looking for likely theatres. I'm planning a campaign for selling the attachments to home televisors. And now, Mr. Gallegher, I'm going out and see my attorney and tell him to put the screws on."

He went out, snorting. The robot gently closed the door, came back, and, without being asked, hurried after beer. Gallegher waved it away.

"I'll use the organ," he moaned, mixing himself a stiff one. "Turn that blasted machine off, Narcissus. I haven't the strength."

"Well, you've found out one thing," the robot said encouragingly. "You didn't build the device for Hopper."

"True. True. I made it for . . . ah . . . either J. W. or Fatty. How can I find out who they are?"

"You need a rest," the robot said. "Why not simply relax and listen to my lovely melodious voice? I'll read to you."

"It's not melodious," Gallegher said automatically and absently. "It squeaks like a rusty hinge."

"To your ears. *My* senses are different. To me, your voice is the croaking of an asthmatic frog. You can't see me as I do, any more than you can hear me as I hear myself. Which is just as well. You'd swoon with ecstasy."

"Narcissus," Gallegher said patiently, "I'm trying to think. Will you kindly shut your metallic trap?"

"My name isn't Narcissus," said the robot. "It's Joe."

"Then I'm changing it. Let's see. I was checking up on DU. What was that number?"

"Red five fourteen hundred M."

"Oh, yeah." Gallegher used the televisor. A secretary was willing but unable to give much useful information.

Devices Unlimited was the name of a holding company, of a sort. It had connection all over the world. When a client wanted a job done, DU, through its agents, got in touch with the right person and fenagled the deal. The trick was that DU supplied the money, financing operations and working on a percentage basis. It sounded fantastically intricate, and Gallegher was left in the dark.

"Any record of my name in your files? Oh— Well, can you tell me who J.W. is?"

"J. W.? I'm sorry, sir. I'll need the full name—"

"I don't have it. And this is important." Gallegher argued. At last he got his way. The only DU man whose initials were J. W. was someone named Jackson Wardell, who was on Callisto at the moment.

"How long has he been there "

"He was born there," said the secretary unhelpfully. "He's never been to Earth in his life. I'm sure Mr. Wardell can't be your man."

Gallegher agreed. There was no use asking for Fatty, he decided, and broke the beam with a faint sigh. Well, what now?

The visor shrilled. On the screen appeared the face of a plump-cheeked, bald, pudgy man who was frowning worriedly. He broke into a relieved chuckle at sight of the scientist.

"Oh, there you are, Mr. Gallegher," he said. "I've been trying to reach you for an hour. Something's wrong with the beam. My goodness, I thought I'd certainly hear from you before this!"

Gallegher's heart stumbled. *Fatty*—of course!

Thank Heaven, the luck was beginning to turn! Fatty—eight hundred credits. On account. On account of what? The machine? Was it the solution to Fatty's problem, or to J.W.'s? Gallegher prayed with brief fervency that Fatty had requested a device that ate dirt and sang "St James Infirmary."

The image blurred and flickered, with a faint crackling. Fatty said hurriedly, "Something's wrong with the line. But—did you do it, Mr. Gallegher? Did you find a method?"

"Sure," Gallegher said. If he could lead the man on, gain some hint of what he had ordered—

"Oh, wonderful! DU's been calling me for days. I've been putting them off, but they won't wait forever. Cuff's bearing down hard, and I can't get around that old statute—"

The screen went dead.

Gallegher almost bit off his tongue in impotent fury. Hastily he closed the circuit and began striding around the lab, his nerves tense with expectation. In a second the visor would ring. Fatty would call back. Naturally. And this time the first question Gallegher would ask would be, "Who are you?"

Time passed.

Gallegher groaned and checked back, asking the operator to trace the call.

"I'm sorry, sir. It was made from a dial visor. We cannot trace calls made from a dial visor."

Ten minutes later Gallegher stopped cursing, seized his hat from its perch atop an iron dog that had once decorated a lawn, and whirled to the door. "I'm going out," he snapped to Narcissus. "Keep an eye on that machine."

"All right. One eye." The robot agreed. "I'll need the other to watch my beautiful insides. Why don't you find out who Cuff is?"

"What?"

"Cuff. Fatty mentioned somebody by that name. He said he was bearing down hard—"

"Check! He did, at that. And—what was it?—he said he couldn't get around an old statue—"

"Statute. It means a law."

"I know what statute means," Gallegher growled. "I'm not exactly a driveling idiot. Not yet, anyhow. Cuff, eh? I'll try the visor again."

There were six Cuffs listed. Gallegher eliminated half of them by gender. He crossed off Cuff-Linx Mig. Co., which left two—Max and Fredk. He televised Frederick, getting a pop-eyed, scrawny youth who was obviously not yet old enough to vote. Gallegher gave the lad a murderous glare of frustration and flipped the switch, leaving Frederick to spread the next half-hour wondering who had called him, grimaced like a demon, and blanked out without a word.

But Max Cuff remained, and that, certainly, was the man. Gallegher felt sure of it when Max Cuff's butler transferred the call to a downtown office, where a receptionist said that Mr. Cuff was spending the afternoon at the Uplift Social Club.

"That so. Say, who is Cuff, anyhow?"

"I beg your pardon?"

"What's his noise? His business, I mean?"

"Mr. Cuff has no business," the girl said frigidly. "He's an alderman."

That was interesting. Gallegher looked for his hat, found it on his head, and took leave of the robot, who did not trouble to answer. "If Fatty calls up again," the scientist commanded, "get his name. See? And keep your eye on that machine, just in case it starts having mutations or something."

That seemed to tie up all the loose ends. Gallegher let himself out of the house. A cool autumn wind was blowing, scattering crisp leaves from the overhead parkways. A few taxiplanes drifted past, but Gallegher hailed a street cab; he wanted to see where he was going. Somehow he felt that a telecall to Max Cuff would produce little of

value. The man would require deft handling, especially since he was "bearing down hard."

"Where, to, bud?"

"Uplift Social Club. Know where it is?"

"Nope," said the driver, "but I can find out." He used his tele-directory on the dashboard. "Downtown. 'Way down."

"O.K.," Gallegher told the man, and dropped back on the cushions, brooding darkly. Why was everybody so elusive? His clients weren't usually ghosts. But Fatty remained vague and nameless—a face, that was all, and one Gallegher hadn't recognized. Who J. W. was anyone might guess. Only Dell Hopper had put in an appearance, and Gallegher wished he hadn't.. The summons rustled in his pocket.

"What I need," Gallegher soliloquized, "is a drink. That was the whole trouble. I didn't say drunk. Not long enough, anyhow. Oh, damn."

Presently the taxi stopped at what had once been a glassbrick mansion, now grimy and forlorn-looking. Gallegher got out, paid the driver, and went up the ramp. A small placard said Uplift Social Club. Since there was no buzzer, he opened the door and went in.

Instantly his nostrils twitched like the muzzle of a war horse scenting cordite. There was drinking going on. With the instinct of a homing pigeon, Gallegher went directly to the bar, set up against one wall of a huge room filled with chairs, tables, and people. A sad-looking man with a derby was playing a pin-ball machine in a corner. He looked up as Gallegher approached, lurched into his path, and murmured, "Looking for somebody?"

"Yeah," Gallegher said. "Max Cuff. They told me he was here."

"Not now," said the sad man. "What do you want with him?"

"It's about Fatty," Gallegher hazarded.

Cold eyes regarded him. "Who?"

"You wouldn't know him. But Max would."

"Max want to see you?"

"Sure."

"Well," the man said doubtfully, "he's down at the Three-Star on a pub-crawl. When he starts that—"

"The Three-Star? Where is it?"

"Fourteenth near Broad."

"Thanks," Gallegher said. He went out, with a longing look at the bar. Not now—not yet. There was business to attend to first.

The Three-Star was a gin mill, with dirty pictures on the walls. They moved in a sterosocopic and mildly appalling manner. Gallegher, after a thoughtful examination, looked the customers over. There weren't many. A huge man at one end of the bar attracted his attention because of the gardenia in his lapel and the flashy diamond on his ring finger.

Gallegher went toward him. "Mr. Cuff?"

"Right," said the big man, turning slowly on the barstool like Jupiter revolving on its axis. He eyed Gallegher, librating slightly. "Who're you?"

"I'm—"

"Never mind," said Cuff, winking. "Never give your right name after you've pulled a job. So you're on the lam, eh?"

"What?"

"I can spot 'em as far away as I can see 'em. You . . . you . . . hey!" Cuff said, bending forward and sniffing. "You been *drinking!*"

"Drinking," Gallegher said bitterly. "It's an understatement."

"Then have a drink with me," the big man invited. "I'm up to E now. Egg flip. Tim!" he roared. " 'Nother egg flip for my pal here! Step it up! And get busy with F."

Gallegher slid onto the stool beside Cuff and watched his companion speculatively. The alderman seemed a little tight.

"Yes," Cuff said, "alphabetical drinking's the only way to do it. You start with A—absinthe—and then work along, brandy, cointreau, daiquiri, egg flip—"

"Then what?"

"F, of course," Cuff said, mildly surprised. "Flip. Here's yours. Good lubrication!"

They drank. "Listen," Gallegher said, "I want to see you about Fatty."

"Who's he?"

"Fatty," Gallegher explained, winking significantly. "You know. You've been bearing down lately. The statute. You know."

"Oh! *Him!* Cuff suddenly roared with Gargantuan laughter. "Fatty, huh? That's good. That's very good. Fatty's a good name for him, all right."

"Not much like his own, is it?" Gallegher said cunningly.

"Not a bit. Fatty!"

"Does he spell his name with an e or an i?"

"Both," Cuff said. "Tim, where's the flip? You, you got it ready, huh? Well, good lubrication, pal."

Gallegher finished his egg flip and went

to work on the flip, which was identical except for the name. What now?"

"About Fatty," he hazarded.

"Yeah?"

"How's everything going?"

"I never answer questions," Cuff said, abruptly sobering. He looked sharply at Gallegher. "You one of the boys? I don't know you."

"Pittsburg. They told me to come to the club when I got to town."

"That doesn't make sense," Cuff said. "Oh, well. It doesn't matter. I just cleaned up some loose ends, and I'm celebrating. Through with your flip? Tim! Gin!"

They had gin for G, a horse's neck for H, and an eye-opener for I. "Now a Jazzbo," Cuff said with satisfaction. "This is the only bar in town that has a drink beginning with J. After that I have to start skipping. I dunno any K drinks."

"Kirchwasser," Gallegher said absently.

"K—huh? What's that?" Cuff bellowed at the bartender. "Tim! You got any kirchwasser?"

"Nope," said the man. "We don't carry it, alderman."

"Then we'll find somebody who does. "You're a smart guy, pal. Come along with me. I *need* you."

Gallegher went obediently. Since Cuff didn't want to talk about Fatty, it behooved him to win the alderman's confidence. And the best way to do that was to drink with him. Unfortunately an alphabetical pub-crawl, with its fantastic mixtures, proved none too easy. Gallegher already had a hangover. And Cuff's thirst was insatiable.

"L? What's L?"

"Lachrymae Christi. Or Liebfraumilch."

"Oh, boy!"

It was a relief to get back to a Martini. After the Orange Blossom Gallegher began to feel dizzy. For R he suggested root beer, but Cuff would have none of that.

"Well, rice wine."

"Yeah. Rice—hey! We missed N! We gotta start over now from A!"

Gallegher dissuaded the alderman with some trouble, and succeeded only after fascinating Cuff with the exotic name ng ga po. They worked on, through sazeracs, tailspins, underground, and vodka. W meant whiskey.

"X?"

They looked at each other through alcoholic fogs. Gallegher shrugged and stared around. How had they got into this swanky, well-furnished private clubroom, he wondered. It wasn't the Uplift, that was certain. Oh, well—

"X?" Cuff insisted. "Don't fail me now, pal."

"Extra whiskey," Gallegher said brilliantly.

"That's it. Only two left. Y and . . . and —what comes after Y?"

"Fatty. Remember?"

"Ol' Fatty Smith," Cuff said, beginning to laugh immoderately. At least, it sounded like Smith. "Fatty just suits him."

"What's his first name?" Gallegher asked.

"Who?"

"Fatty."

"Never heard of him," Cuff said, and chuckled. A page boy came over and touched the alderman's arm.

"Someone to see you, sir. They're waiting outside."

"Right. Back in a minute pal. Everybody always knows where to find me—'specially here. Don't go 'way. There's still Y and . . . and . . . and the other one."

He vanished. Gallegher put down his untasted drink, stood up, swaying slightly, and headed for the lounge. A televisor booth there caught his eye, and, on impulse, he went in and vised his lab.

"Drunk again," said Narcissus, as the robot's face appeared on the screen.

"You said it," Gallegher agreed. "I'm . . . *urp* . . . high as a kite. But I got a clue, anyway."

"I'd advise you to get a police escort," the robot said. "Some thugs broke in looking for you, right after you left."

"S-s-some what? Say that again."

"Three thugs," Narcissus repeated patiently. "The leader was a thin, tall man in a checkered suit with yellow hair and a gold front tooth. The others—"

"I don't want a description," Gallegher snarled "Just tell me what happened?"

"Well, that's all. They wanted to kidnap you. Then they tried to steal the machine. I chased them out. For a robot, I'm pretty tough."

"Did they hurt the machine?"

"What about me? Narcissus demanded plaintively. "I'm much more important than that gadget. Have you no curiosity about my wounds?"

"No," Gallegher said. "Have you some?"

"Of course not. But you could have demonstrated some slight curiosity—"

"Did they hurt that machine?"

"I didn't let them get near it," the robot said. "And the hell with you."

"I'll ring you back," Gallegher said. "Right now I need black coffee."

He beamed off, stood up, and wavered out of the booth. Max Cuff was coming toward him. There were three men following the alderman.

One of them stopped short, his jaw dropping. "Cripes!" he said. "That's the guy, boss. That's Gallegher. Is he the one you been drinking with?"

Gallegher tried to focus his eyes. The man swam into clarity. He was a tall, thin chap in a checkered suit, and he had yellow hair and a gold front tooth.

"Conk him," Cuff said. "Quick, before he yells. And before anybody else comes in here. Gallegher, huh? Smart guy, huh?"

Gallegher saw something coming at his head, and tried to leap back into the visor booth like a snail retreating into its shell. He failed. Spinning flashes of glaring light dazzled him.

He was conked.

The trouble with this social culture, Gallegher thought dreamily, was that it was suffering both from overgrowth and calcification of the exoderm. A civilization may be likened to a flowerbed. Each individual plant stands for a component part of the culture. Growth is progress. Technology, that long-frustrated daffodil, had had B_1 concentrate poured on its roots, the result of wars that forced its growth through sheer necessity. But no world is satisfactory unless the parts are equal to the whole.

The daffodil shaded another plant that developed parasitic tendencies. It stopped using its roots. It wound itself around the daffodil, climbing up on its stem and stalks and leaves, and that strangling liana was sociology, politics, economics, finance—outmoded forms that changed too slowly, outstripped by the blazing comet of the sciences, riding high in the unlocked skies of this new era. Long ago writers had theorized that in the future—their future—the sociological pattern would be different. In the day of rocketships such illogical *mores* as watered stock, dirty politics, and gangsters would not exist. But those theorists had not seen clearly enough. They thought of rocketships as vehicles of the far distant future.

Ley landed on the moon before automobiles stopped using carburetors.

The two great wars of the early twentieth century gave a violent impetus to technology, and that growth continued. Unfortunately most of the business of living was based on such matters as man hours and monetary fixed standards. The only parallel was the day of the great bubbles—the Mississippi Bubble and its brothers. It was, finally, a time of chaos, reorganization, sifting precariously from old standards to new, and a seesaw bouncing vigorously from one extreme to the other. The legal profession had become so complicated that batteries of experts needed Pedersen Calculators and the brain machines of Mechanistra to marshal their farfetched arguments, which went wildly into uncharted realms of symbolic logic and—eventually—pure nonsense. A murderer could get off scot-free provided he didn't sign a confession. And even if he did, there were ways of discrediting solid, legal proof. Precedents were shibboleths. In that maze of madness, administrators turned to historical solidities—legal precedents—and these were often twisted against them.

Thus it went, all down the line. Later sociology would catch up with technlogy. It hadn't, just yet. Economic gambling had reached a pitch never before attained in the history of the world. Geniuses were needed to straighten out the mess. Mutations eventually provided such geniuses, by natural compensation; but a long time was to pass until that satisfactory conclusion had been reached. The man with the best chance for survival, Gallegher had realized by now, was one with a good deal of adaptability and a first-class all-around stock of practical and impractical knowledge, versed in practically everything. In short, in matters vegetable, animal or mineral—

Gallegher opened his eyes. There was little to see, chiefly because, as he immediately discovered, he was slumped face down at a table. With an effort Gallegher sat up. He was unbound, and in a dimly lighted attic that seemed to be a storeroom; it was littered with broken-down junk. A fluorescent burned faintly on the ceiling. There was a door, but the man with the gold tooth was standing before it. Across the table sat Max Cuff, carefully pouring whiskey into a glass.

"I want some," Gallegher said feebly.

Cuff looked at him. "Awake, huh? Sorry Blazer socked you so hard."

"Oh, well. I might have passed out anyway. Those alphabetical pub-crawls are really something."

"Heigh-ho," Cuff said, pushing the glass toward Gallegher and filling another for himself. "That's the way it goes. It was smart of you to stick with me—the one place the boys wouldn't think of looking."

"I'm naturally clever," Gallegher said

modestly. The whiskey revived him. But his mind still felt foggy. "Your . . . uh . . . associates, by which I mean lousy thugs, tried to kidnap me earlier, didn't they?"

"Uh-huh. You weren't in. That robot of yours—"

"He's a beaut."

"Yeah. Look, Blazer told me about the machine you had set up. I'd hate to have Smith get his hands on it."

Smith—Fatty. Hm-m-m. The jigsaw was dislocated again. Gallegher sighed.

If he played the cards close to his chest—

"Smith hasn't seen it yet."

"I know that," Cuff said. "We've been tapping his visor beam. One of our spies found out he'd told DU he had a man working on the job—you know? Only he didn't mention the man's name. All we could do was shadow Smith and tap his visor till he got in touch with you. After that—well, we caught the conversation. You told Smith you'd got the gadget."

"Well?"

"We cut in on the beam, fast, and Blazer and the boys went down to see you. I told you I didn't want Smith to keep that contract."

"You never mentioned a contract," Gallegher said.

"Don't play dumb. Smith told 'em, up at DU, that he'd laid the whole case before you."

Maybe Smith had. Only Gallegher had been drunk at the time, and it was Gallegher Plus who had listened, storing the information securely in the subconscious.

"So?"

Cuff burped. He pushed his glass away suddenly. "I'll see you later. I'm tight, blast it. Can't think straight. But—I don't want Smith to get that machine. Your robot won't let us get near it. You'll get in touch with him by visor and send him off somewhere, so the boys can pick up your gadget. Say yes or no. If it's no, I'll be back."

"No," Gallegher said. "On account of you'd kill me anyway, to stop me from building another machine for Smith."

Cuff's lids drew down slowly over his eyes. He sat motionless, seemingly asleep, for a time. Then he looked at Gallegher blankly and stood up.

"I'll see you later, then." He rubbed a hand across his forehead; his voice was a little thick. "Blazer, keep the lug here."

The man with a gold tooth came forward. "You O.K.?"

"Yeah. I can't think—" Cuff grimaced. "Turkish bath. That's what I need." He went toward the door, pulling Blazer with him. Gallegher saw the alderman's lips move. He read a few words.

"—drunk enough . . . vise that robot . . . try it—"

Then Cuff went out. Blazer came back, sat opposite Gallegher, and shoved the bottle toward him. "Might as well take it easy," he suggested. "Have another; you need it."

Gallegher thought: Smart guys. They figure if I get stinko, I'll do what they want. Well—

There was another angle. When Gallegher was thoroughly under the influence of alcohol, his subconscious took over. And Gallegher Plus was a scientific genius—mad, but good.

Gallegher Plus might be able to figure a way out of this.

"That's it," Blazer said, watching the liquor vanish. "Have another. Max is a good egg. He wouldn't put the bee on you. He just can't stand people helixing up his plans."

"What plans?"

"Like with Smith," Blazer explained.

"I see." Gallegher's limbs were tingling. Pretty soon he should be sufficiently saturated with alcohol to unleash his subconscious. He kept drinking.

Perhaps he tried too hard. Usually Gallegher mixed his liquor judiciously. This time, the factors of the equation added up to a depressing zero. He saw the surface of the table moving slowly toward his nose, felt a mild, rather pleasant bump, and began to snore. Blazer got up and shook him.

"One half so precious as the stuff they sell," Gallegher said thickly. "High-piping Pehlevi, with wine, wine, wine, wine. *Red* wine."

"Wine he wants," Blazer said. "The guy's a human blotter." He shook Gallegher again, but there was no response. Blazer grunted, and his footsteps sounded, growing fainter.

Gallegher heard the door close. He tried to sit up, slid off the chair, and banged his head agonizingly against the table leg.

It was more effective than cold water. Wavering, Gallegher crawled to his feet. The attic room was empty except for himself and other jetsam. He walked with abnormal carefulness to the door and tried it. Locked. Reinforced with steel, at that.

"Fine stuff," Gallegher murmured. "The one time I need my subconscious, it stays buried. How the devil can I get out of here?"

There was no way. The room had no windows, and the door was firm. Gallegher floated toward the piles of junk. An old sofa. Box of scraps. Pillows. A rolled carpet. Junk.

Gallegher found a length of wire, a bit of mica, a twisted spiral of plastic, once part of a mobile statuette, and some other trivia. He put them together. The result was a thing vaguely resembling a gun, though it had some resemblance to an egg beater. It looked as weird as a Martian's doodling.

After that, Gallegher returned to the chair and sat down, trying, by sheer will power, to sober up. He didn't succeed too well. When he heard footsteps returning, his mind was still fuzzy.

The door opened. Blazer came in, with a swift, wary glance at Gallegher, who had hidden the gadget under the table.

"Back, are you? I thought it might be Max."

"He'll be along, too," Blazer said. "How d'you feel?"

"Woozy. I could use another drink. I've finished this bottle." Gallegher had finished it. He had poured it down a rat hole.

Blazer locked the door and came forward as Gallegher stood up. The scientist missed his balance, lurched forward, and Blazer hesitated. Gallegher brought out the crazy egg-beater gun and snapped it up to eye level, squinting along its barrel at Blazer's face.

The thug went for something, either his gun or his sap. But the eerie contrivance Gallegher had leveled at him worried Blazer. His motion was arrested abruptly. He was wondering what menace confronted him. In another second he would act, one way or another—perhaps continuing that arrested smooth motion toward his belt.

Gallegher did not wait. Blazer's stare was on the gadget. With utter disregard for the Queensbury Rules, Gallegher kicked his opponent below the belt. As Blazer folded up, Gallegher followed his advantage by hurling himself headlong on the thug and bearing him down in a wild, octopuslike thrashing of lanky limbs. Blazer kept trying to reach his weapon, but that first foul blow had handicapped him.

Gallegher was still too drunk to coordinate properly. He compromised by crawling atop his enemy and beating the man repeatedly on the solar plexis. Such tactics proved effective. After a time, Gallegher was able to wrench the sap from Blazer's grasp and lay it firmly along the thug's temple.

That was that.

With a glance at the gadget, Gallegher arose, wondering what Blazer had thought it was. A death-ray projector, perhaps. Gallegher grinned faintly. He found the door key in his unconscious victim's pocket, let himself out of the attic, and warily descended a stairway. So far, so good.

A reputation for scientific achievements has its advantages. It had, at least, served the purpose of distracting Blazer's attention from the obvious.

What now?

The house was a three-story, empty structure near the Battery. Gallegher escaped through a window. He did not pause till he was in an airtaxi, speeding uptown. There, breathing deeply, he flipped the wind filter and let the cool night breeze cool his perspiring cheeks. A full moon rode high in the black autumn sky. Below, through the earth-view transparent panel, he could see the brilliant ribbons of streets, with slashing bright diagonals marking the upper level speedways.

Smith, Fatty Smith. Connected with DU, somehow—

With an excess of caution, he paid off the pilot and stepped out on a rooftop landing in the White Way district. There were televisor booths here, and Gallegher called his lab. The robot answered.

"Narcissus—"

"Joe," the robot corrected. "And you've been drinking some more. Why don't you sober up?"

"Shut up and listen. What's been happening?"

"Not much."

"Those thugs. Did they come back?"

"No," Narcissus said, "but some officers came to arrest you. Remember that summons they served you with today? You should have appeared in court at 5 p.m."

Summons. Oh, yeah. Dell Hopper—one thousand credits.

"Are they there now?"

"No. I said you'd taken a powder."

"Why?" asked Gallegher.

"So they wouldn't hang around. Now you can come home whenever you like—if you take reasonable precautions.

"Such as what?"

"That's your problem," Narcissus said. "Get a false beard I've done my share."

Gallegher said, "All right, make a lot of black coffee. Any other calls?"

"One from Washington. A commander in the space police. He didn't give his name."

"Space police! Are they after me, too? What did he want?"

"You," the robot said. "Good-by. You interrupted a lovely song I was singing to myself."

"Make that coffee," Gallegher ordered as the image faded. He stepped out of the booth and stood for a moment, considering, while he stared blankly at the towers of Manhattan rising around him, with their irregular patterns of lighted windows, square, oval, circular, crescent, or star-shaped.

A call from Washington.

Hopper cracking down.

Max Cuff and his thugs.

Fatty Smith.

Smith was the best bet. He tried the visor again, calling DU.

"Sorry, we have closed for the day."

"This is important," Gallegher insisted. "I need some information. I've got to get in touch with a man—"

"I'm sorry."

"S-m-i-t-h," Gallegher spelled. "Just look him up in the file or something, won't you? Or do you want me to cut my throat while you watch?" He fumbled in his pocket.

"If you will call tomorrow—"

"That'll be too late. Can't you just look it up for me? Please. Double please."

"Sorry."

"I'm a stockbroker in DU," Gallegher snarled. "I warn you, my girl!"

"A . . . oh. Well, it's irregular, but—S-m-i-t-h? One moment. The first name is what?"

"I don't know. Give me all the Smiths."

The girl disappeared and came back with a file box labeled SMI. "Oh, dear," she said, rifling through the cards. "There must be several hundred Smiths."

Gallegher groaned. "I want a fat one," he said wildly. "There's no way of checking on that, I suppose."

The secretary's lips tightened. "Oh, a rib. I see. Good *night!*" She broke the connection.

Gallegher sat staring at the screen. Several hundred Smiths. Not so good. In fact, definitely bad.

Wait a minute. He had bought DU stock when it was on the skids. Why? He must have expected a rising market. But the stock had continued to fall, according to Arnie.

There might be a lead there.

He reached Arnie at the broker's home and was insistent. "Break the date. This won't take you long. Just find out for me why DU's on the skids. Call me back at my lab. Or I'll break your neck. And make it fast! Get that dope, understand?"

Arnie said he would. Gallegher drank black coffee at a counter stand, went home warily by taxi, and let himself into his house. He double-locked the door behind him. Narcissus was dancing before the big mirror in the lab.

"Any calls?" Gallegher said.

"No. Nothing's happened. Look at this graceful *pas.*"

"Later. If anybody tries to get in, call me. I'll hide till you can get rid of 'em." Gallegher squeezed his eyes shut. "Is the coffee ready?"

"Black and strong. In the kitchen."

The scientist went into the bathroom instead, stripped, cold-showered, and took a brief irradiation. Feeling less woozy, he returned to the lab with a gigantic cup full of steaming coffee. He perched on Bubbles and gulped the liquid.

"You look like Rodin's Thinker," Narcissus remarked. "I'll get you a robe. Your ungainly body offends my aesthetic feelings."

Gallegher didn't hear. He donned the robe, since his sweating skin felt unpleasantly cool, but continued to drink the coffee and stare into space.

"Narcissus. More of this."

Equation: a (or) b (or) c equals x. He had been trying to find the value of a, b, or c. Maybe that was the wrong way. He hadn't located J. W. at all. Smith remained a phantom. And Dell Hopper (one thousand credits) had been of no assistance.

It might be better to find the value of x. That blasted machine must have some purpose. Granted, it ate dirt. But matter cannot be destroyed; it can be changed into other forms.

Dirt went into the machine; nothing came out.

Nothing visible.

Free energy?

That was invisible, but could be detected with instruments.

Voltmeter, ammeter—gold leaf—

Gallegher turned the machine on again briefly. Its singing was dangerously loud, but no one rang the door buzzer, and after a minute or two Gallegher snapped the switch back to OFF. He had learned nothing.

Arnie called. The broker had secured the information Gallegher wanted.

" 'Twasn't easy. I had to pull some wires. But I found out why DU stock's been dropping."

"Thank Heaven for that! Spill it."

"DU's a sort of exchange, you know. They farm out jobs. This one—it's a big office building to be constructed in downtown Manhattan. Only the contractor hasn't been able to start yet. There's a lot of dough tied up in the deal, and there's a whispering campaign that's hurt the DU stock."

"Keep talking."

Arnie went on. "I got all the info I could, in case. There were two firms bidding on the job."

"Who?"

"Ajax, and somebody named—"

"Not Smith?"

"That's it," Arnie said. "Thaddeus Smith. S-m-e-i-t-h, he spells it."

There was a long pause. "S-m-e-i-t-h," Gallegher repeated at last. "So that's why the girl at DU couldn't . . . eh? Oh, nothing. I ought to have guessed it." Sure. When he'd asked Cuff whether Fatty spelled his name with an e or an i, the alderman had said both. Smeith. Ha!

"Smeith got the contract," Arnie continued. "He underbid Ajax. However, Ajax has political pull. They got some alderman to clamp down and apply an old statute that put the kibosh on Smeith. He can't do a thing."

"Why not?"

"Because," Arnie said, "the law won't permit him to block Manhattan traffic. It's a question of air rights. Smeith's client—or DU's client, rather—bought the property lately, but air rights over it had been leased for a ninety-nine-year period to Transworld Strato. The stratoliners have their hangar just beyond that property, and you know they're not gyros. They need a straightaway course for a bit before they can angle up. Well, their right of way runs right over the property. Their lease is good. For ninety-nine years they've got the right to use the air over that land, above and over fifty feet above ground level."

Gallegher squinted thoughtfully. "How could Smeith expect to put up a building there, then?"

"The new owner possesses the property from fifty feet above soil down to the center of the earth. Savvy? A big eighty-story building—most of it underground. It's been done before, but not against political pull. If Smeith fails to fulfill his contract, the job goes to Ajax—and Ajax is hand-in-glove with that alderman."

"Yeah. Max Cuff," Gallegher said. "I've met the lug. Still—what's this statute you mentioned?"

"An old one, pretty much obsolete, but still on the books. It's legal. I checked. You can't interfere with downtown traffic, or upset the stagger system of transport."

"Well?"

"If you dig a hole for an eighty-story building," Arnie said, "you get a lot of dirt and rock. How can you haul it away without upsetting traffic? I didn't try to figure out how many tons have to be removed."

"I see," Gallegher said softly.

"So there it is, on a platinum platter. Smeith took the contract. Now he's stymied. He can't get rid of the dirt he'll be excavating, and pretty soon Ajax will take over and wangle a permit to truck out the material."

"How—if Smeith can't?"

"Remember the alderman? Well, a few weeks ago some of the streets downtown were blocked off, for repairs. Traffic was rerouted—right by that building site. It's been siphoned off there, and it's so crowded that dirt trucks would tangle up the whole business. Of course it's temporary"—Arnie laughed shortly—"temporary until Smeith is forced out. Then the traffic will be rerouted again, and Ajax can wangle their permit."

"Oh." Gallegher looked over his shoulder at the machine. "There may be a way—"

The door buzzer rang. Narcissus made a gesture of inquiry.

Gallegher said, "Do me another favor, Arnie. I want to get Smeith down here to my lab, quick."

"All right, vise him."

"His visor's tapped. I don't dare. Can you hop over and bring him here, right away?"

Arnie sighed. "I certainly earn my commissions the hard way. But O.K."

He faded. Gallegher listened to the door buzzer, frowned, and nodded to the robot. "See who it is. I doubt if Cuff would try anything now, but—well, find out. I'll be in this closet."

He stood in the dark, waiting, straining his ears, and wondering. Smeith—he had solved Smeith's probdem. The machine ate dirt. The only effective way to get rid of earth without running the risk of a nitrogen explosion.

Eight hundred credits, on account, for a device or a method that would eliminate enough earth—safely—to provide space for an underground office building, a structure that had to be mostly subterranean because of prior-leased air rights.

Fair enough.

Only—*where did that dirt go?*

Narcissus returned and opened the closet door. "It's a Commander John Wall. He vised from Washington earlier tonight. I told you, remember?"

"John Wall?"

J. W., fifteen hundred credits! The third client!

"Let him in," Gallegher ordered breathlessly. "Quick! Is he alone?"

"Yes."

"Then step it up!"

Narcissus padded off, to return with a gray-haired, stocky figure in the uniform of the space police. Wall grinned briefly at Gallegher, and then his keen eyes shot toward the machine by the window.

"That it?"

Gallegher said, "Hello, commander. I . . . I'm pretty sure that's it. But I want to discuss some details with you first."

Wall frowned. "Money? You can't hold up the government. Or am I misjudging you? Fifty thousand credits should hold you for a while." His face cleared. "You have fifteen hundred already; I'm prepared to write you a check as soon as you've completed a satisfactory demonstration."

"Fifty thou—" Gallegher took a deep breath. "No, it isn't that, of course. I merely want to make certain that I've filled the terms of our agreement. I want to be sure I've met every specification." If he could only learn what Wall had requested! If he, too, had wanted a machine that ate dirt—

It was a farfetched hope, an impossible coincidence, but Gallegher had to find out. He waved the commander to a chair.

"But we discussed the problem in full detail—"

"A double-check," Gallegher said smoothly. "Narcissus, get the commander a drink."

"Thanks, no."

"Coffee?"

"I'd be obliged. Well, then—as I told you some weeks ago, we needed a spaceship control—a manual that would meet the requirements of elasticity and tensile strength."

"Oh-oh," Gallegher thought.

Wall leaned forward, his eyes brightening. "A spaceship is necessarily big and complicated. Some manual controls are required. But they cannot move in a straight line; construction necessitates that such controls must turn sharp corners, follow an erratic and eccentric path from *here* to *here.*"

"Well—"

"Thus," Wall said, "you want to turn on a water faucet in a house two blocks away. And you want to do it while you're here, in your laboratory. How?"

"String. Wire. Rope."

"Which could wind around corners as . . . . say . . . a rigid rod could not. However, Mr. Gallegher, let me repeat my statement of two weeks ago. *That faucet is hard to turn.* And it must be turned often, hundreds of times a day when a ship is in free space. Our toughest wire cables have proved unsatisfactory. The stress and strain snap them. When a cable is *bent,* and when it is also *straight*—you see?"

Gallegher nodded. "Sure. You can break wire by bending it back and forth often enough."

"That is the problem we asked you to solve. You said it could be done. Now—have you done it And how?"

A manual control that could turn corners and withstand repeated stresses. Gallegher eyed the machine. Nitrogen—a thought was moving in the back of his mind, but he could not quite capture it.

The buzzer rang. "Smeith," Gallegher thought, and nodded to Narcissus. The robot vanished.

He returned with four men at his heels. Two of them were uniformed officers. The others were, respectively, Smeith and Dell Hopper.

Hopper was smiling savagely. "Hello, Gallegher," he said. "We've been waiting. We weren't fast enough when this man"—he nodded toward Commander Wall—"came in, but we waited for a second chance."

Smeith, his plumb face puzzled, said, "Mr. Gallegher, what is this? I rang your buzzer, and then these men surrounded me—"

"It's O.K.," Gallegher said. "You're on top, at least. Look out that window."

Smeith obeyed. He popped back in again, beaming.

"That hole—"

"Right. I didn't cart the dirt away, either. I'll give you a demonstration presently."

"You will in jail," Hopper said acidly. "I warned you, Gallegher, that I'm not a man to play around with. I gave you a thousand credits to do a job for me, and you neither did the job nor returned the money."

Commander Wall was staring, his coffee cup, forgotten, balanced in one hand. An officer moved forward and took Gallegher's arm.

"Wait a minute," Wall began but Smeith was quicker.

"I think I owe Mr. Gallegher some credits," he said, snatching out a wallet. "I've not much more than a thousand on me, but you can take a check for the balance, I suppose. If this—gentleman—wants cash, there should be a thousand here."

Gallegher gulped.

Smeith nodded at him encouragingly. "You did *my* job for me, you know. I can begin construction—and excavation—tomorrow. Without bothering to get a trucking permit, either."

Hopper's teeth showed. "The devil with the money! I'm going to teach this man a lesson! My time is worth plenty, and he's completely upset my schedule. Options, scouts—I've gone ahead on the assumption that he could do what I paid him for, and now he blandly thinks he can wiggle out. Well, Mr. Gallegher, you can't. You failed to observe that summons you were handed today, which makes you legally liable to certain penalties—and you're going to suffer them, Gammit!"

Smeith looked around. "But—I'll stand good for Mr. Gallegher. I'll reimburse—"

"No!" Hopper snapped.

"The man says no," Gallegher murmured. "It's just my heart's blood he wants. Malevolent little devil, isn't he?"

"You drunken idot!" Hopper snarled. "Take him to the jail, officers. Now!"

"Don't worry, Mr. Gallegher," Smeith encouraged. "I'll have you out in no time. I can pull a few wires myself."

Gallegher's jaw dropped. He breathed hoarsely, in an asthmatic fashion, as he stared at Smeith, who drew back.

"Wires," Gallegher whispered. "And a . . . a stereoscopic screen that can be viewed from any angle. You said—wires!"

"Take him away," Hopper ordered brusquely.

Gallegher tried to wrench away from the officers holding him. "Wait a minute! One minute! I've got the answer now. It *must* be the answer. Hopper, I've done what you wanted—and you, too, commander. Let me go."

Hopper sneered and jerked his thumb toward the door. Narcissus walked forward, cat-footed. "Shall I break their heads, chief?" he inquired gently. "I like blood. It's a primary color."

Commander Wall put down his cup and rose, his voice sounding crisp and metallic. "All right, officers. Let Mr. Gallegher go."

"Don't do it," Hopper insisted. "Who are you, anyway? A space captain!"

Wall's weathered cheeks darkened. He brought out a badge in a smaller leather case. "Commander Wall," he said. "Administrative Space Commission. You"—he pointed to Narcissus—"I'm deputizing you as a government agent, *pro tem.* If these officers don't release Mr. Gallegher in five seconds, go on and break their heads."

But that was unnecessary. The Space Commission was *big.* It had the government behind it, and local officials were, by comparison, small potatoes. The officers hastily released Gallegher and tried to look as though they'd never touched him.

Hopper seemed ready to explode. "By what right do you interfere with justice, commander?" he demanded.

"Right of priority. The government needs a device Mr. Gallegher has made for us. He deserved a hearing, at least."

"He does *not!*"

Wall eyed Hopper coldly. "I think he said, a few moments ago, that he had fulfilled your commission also."

"With that?" The big shot pointed to the machine. "Does that look like a stereoscopic screen?"

Gallegher said, "Get me an ultra-violet, Narcissus. Fluorescent." He went to the device, praying that his guess was right. But it had to be. There was no other possible answer. Extract nitrogen from dirt or rock, extract all gaseous content, and you have inert matter.

Gallegher touched the switch. The machine started to sing "St. James Infirmary." Commander Wall looked startled and slightly less sympathetic. Hopper snorted. Smeith ran to the window and ecstatically watched the long tentacles eat dirt, swirling madly in the moonlit pit below.

"The lamp, Narcissus."

It was already hooked up on an extension cord. Gallegher moved it slowly about the machine. Presently he had reached the grooved wheel at the extreme end, farthest from the window.

Something fluoresced.

It fluoresced blue—emerging from the little valve in the metal cylinder, winding about the grooved wheel, and piling in coils on the laboratory floor. Gallegher touched the switch; as the machine stopped, the valve snapped shut, cutting off the blue, cryptic thing that emerged from the cylinder. Gallegher picked up the coil. As he moved the light away, it vanished. He brought the lamp closer—it reappeared.

"Here you are, commander," he said. "Try it."

Wall squinted at the fluorescence. "Tensile strength?"

"Plenty," Gallegher said. "It has to be. Nonorganic, mineral content of solid earth, compacted and compressed into wire. Sure, it's got tensile strength. Only you couldn't support a ton weight with it."

Wall nodded. "Of course not. It would cut through steel like a thread through butter. Fine, Mr. Gallegher. We'll have to make tests—"

"Go ahead. It'll stand up. You can run this wire around corners all you want, from one end of a spaceship to another, and it'll never snap under stress. It's too thin. It won't—it can't—be strained unevenly, because it's too thin. A wire cable couldn't do it. You needed flexibility that wouldn't cancel tensile strength. The only possible answer was a thin, tough wire."

The commander grinned. That was enough.

"We'll have the routine tests," he said. "Need any money now, though? We'll advance anything you need, within reason—say up to ten thousand."

Hopper pushed forward. "I never ordered wire, Gallegher. So you haven't fulfilled my commission."

Gallegher didn't answer. He was adjusting his lamp. The wire changed from blue to yellow fluorescence, and then to red.

"This is your screen, wise guy," Gallegher said. "See the pretty colors?"

"Naturally I see them! I'm not blind. But—"

"Different colors, depending on how many angstroms I use. Thus. Red. Blue, Red again. Yellow. And when I turn off the lamp—"

The wire Wall still held became invisible.

Hopper closed his mouth with a snap. He leaned forward, cocking his head to one side.

Gallegher said, "The wire's got the same refractive index as air. I made it that way, on purpose." He had the grace to blush slightly. Oh, well—he could buy Gallegher Plus a drink later.

"On purpose?"

"You wanted a steroscopic screen which could be viewed from any angle without optical distortion. And in color—that goes without saying, these days. Well, here it is."

Hopper breathed hard.

Gallegher beamed at him, "Take a box frame and string each square with this wire. Make a mesh screen. Do that on all four sides. String enough wires inside of the box. You have, in effect, an invisible cube, made of wire. All right. Use ultraviolet to project your film or your television, and you have patterns of fluorescence, depending on the angstrom strength patterns. In other words—a picture. A colored picture. A three-dimensional picture, because it's projected onto an invisible cube. And, finally, one that can be viewed from any angle without distortion, because it does more than give an optical illusion of steroscopic vision—it's actually a three-dimensional picture. Catch?"

Hopper said feebly, "Yes. I understand. "You . . . why didn't you tell me this before?"

Gallegher changed the subject in haste. "I'd like some police protection, Commander Wall. A crook named Max Cuff has been trying to get his hooks on this machine. His thugs kidnaped me this afternoon, and—"

"Interfering with government business, eh?" Wall said grimly. "I know these jackpot politicians. Max Cuff won't trouble you any more—if I may use the visor?"

Smeith beamed at the prospect of Cuff getting it in the neck. Gallegher caught his eye. There was a pleasant, jovial gleam in it, and, somehow, it reminded Gallegher to offer his guests drinks. Even the commander accepted this time, turning from his finished visor call to take the glass Narcissus handed him.

"Your laboratory will be under guard," he told Gallegher. "So you'll have no further trouble."

He drank, stood up, and shook Gallegher's hand. "I must make my report. Good luck, and many thanks. We'll call you tomorrow."

He went out, after the two officers. Hopper, gulping his cocktail, said, "I ought to apologize. But it's all water under the bridge, eh, old man?"

"Yeah," Gallegher said. "You owe me some money."

"Trench will mail you the check. And . . . uh . . . and—" His voice died away.

"Something?"

"N-nothing," Hopper said, putting down his glass and turning green. "A little fresh air . . . urp!"

The door slammed behind him. Gallegher and Smeith eyed each other curiously.

"Odd," Smeith said.

"A visitation from heaven, maybe,"

Gallegher surmised. "The mills of the gods—"

"I see Hopper's gone," Narcissus said, appearing with fresh drinks.

"Yeah. Why?"

"I thought he would. I gave him a Mickey Finn," the robot explained. "He never looked at me once. I'm not exactly vain, but a man so insensitive to beauty deserves a lesson. Now don't disturb me. I'm going into the kitchen and practice dancing, and you can get your own liquor out of the organ. You may come and watch if you like."

Narcissus spun out of the lab, his innards racing. Gallegher sighed.

"That's the way it goes," he said.

"What?"

"Oh, I dunno. Everything. I get, for example, orders for three entirely different things, and I get drunk and make a gadget that answers all three problems. My subconscious does things the easy way. Unfortunately, it's the hard way for me—after I sober up."

"Then why sober up?" Smeith asked cogently. "How does that liquor organ work?"

Gallegher demonstrated. "I feel lousy," he confided. "What I need is either a week's sleep, or else—"

"What "

"A drink. Here's how. You know—one item still worries me."

"What, again?"

"The question of why that machine sings 'St. James Infirmary' when it's operating."

"It's a good song," Smeith said.

"Sure, but my subconscious works logically. Crazy logic, I'll admit. Nevertheless—"

"Here's how," Smeith said.

Gallegher relaxed. He was beginning to feel like himself again. A warm, rosy glow. There was money in the bank. The police had been called off. Max Cuff was, no doubt, suffering for his sins. And a heavy thumping announced that Narcissus was dancing in the kitchen.

It was past midnight when Gallegher choked on a drink and said, "Now I remember!"

"Swmpmf," Smeith said, startled. "Whatzat?"

"I feel like singing."

"So what?"

"Well, I feel like singing 'St. James Infirmary.' "

"Go right ahead," Smeith invited.

"But not alone," Gallegher amplified. "I *always* like to sing that when I get tight, but I figure it sounds best as a duet. Only I was alone when I was working on that machine."

"Ah?"

"I must have built in a recording playback," Gallegher said, lost in a vast wonder at the mad resources and curious deviations of Gallegher Plus. "My goodness. A machine that performs four operations at once. It eats dirt, turns out a spaceship manual control, makes a stereoscopic nondistorting projection screen, and sings a duet with me. How strange it all seems."

Smeith considered. "You're a genius."

"That, of course. Hm-m-m." Gallegher got up, turned on the machine, and returned to perch atop Bubbles. Smeith, fascinated by the spectacle, went to hang on the window sill and watch the flashing tentacles eat dirt. Invisible wire spun out along the grooved wheel. The calm of the night was shattered by the more or less melodious tones of the "St James Infirmary."

Above the lugubrious voice of the machine rose a deeper bass, passionately exhorting someone unnamed to search the wide world over.

"But you'll never find
Another sweet *ma-a-ahn* like me."

Gallegher Plus was singing, too.

THE BEAST—*continued from page 45.*

EPILOGUE

It was a spring morning fifty years later. Len Christopher, assistant keeper, New York Greater Zoological Gardens, walked slowly along the line of big cat cages. Suddenly, he stopped and stared at a vast, metal-barred structure that glittered in the rays of the rising sun.

"Funny," he muttered, "I swear that wasn't there last night. Wonder when it arri—"

He stopped. The top of his head made a valiant effort to unfasten from the rest of him. For a moment he stood gaping at the blue-green-yellow-red nightmare that loomed collossal behind the four-inch metal bars. And then—

Then he was running, yelling, for the superintendent's office.

WHY WORRY?

WORRY uses an immense amount of vital force. People who worry not only use up their energy during the day by worrying, but they rob themselves of that greatest of all restoratives, sleep. People who worry can't sleep. They lose their appetite. They often end up by getting really ill. How often have you heard it said, 'I am worried to death!'?

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